MEDICAI[illegible]ATION RATE DEVELOPMENT

by Go[illegible] Trapnell, Project Director
Rose Chu, Project Manager
Alice Wade and Elizabeth Peppe

Federal Project Officer: Ronald Lambert

Actuarial Research Corporation

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EXECUTIVE SUMMARY

States are expanding their Medicaid managed care programs in order to control costs, coordinate services, and improve access to care. Many of the managed care programs are paid on the basis of capitation. This grant was designed to study the feasibility of using Medicaid Statistical Information System (MSIS) data, which is already submitted by half the states to HCFA, as the primary fee-for-service data source to calculate upper payment limits and capitation rates for managed care plans.

Alabama, Kentucky, Maine, and Wisconsin were chosen as the four study states. These are medium-sized states in different regions which did not have major data problems. The reliability of the MSIS data was established by reviewing HCFA edits of state MSIS data, comparing HCFA-2082 statistical data (which is generated from MSIS) with the HCFA-64 financial data, comparing HCFA-2082 enrollment data with Federal programs (AFDC and SSI) and comparing FY 1990 and FY 1991 data.

MSIS Personal Summary Records are currently created on a cash basis so they would include all claims paid in a fiscal year regardless of date of service. HCFA constructed incurred Personal Summary Records for all services performed in FY 1990 and paid in FY 1990 and 1991 for this grant. The FY 1990 base year fee-for-service database for costs and eligibility were created from these records.

The Personal Summary Records provided demographic, Medicaid eligibility, and claims data for the analytic database. Medicaid eligibles were categorized by type of Medicaid user (institutionalized, significant home health user, and those not long-term care users) and Medicaid eligibility category (cash and non-cash, AFDC children and adults, SSI aged and disabled). Records were checked for valid dates of birth and death and other edits. Total eligibility years and expenditures from the MSIS Personal Summary Records were compared with HCFA-2082 totals. Eligibility categories were re-coded to match dates of birth. The disabled were separated into those with and without Medicare. The Personal Summary Records indicate if Medicaid claims are partially paid by Medicare but do not contain a Medicare indicator for eligibles without claims. Those disabled eligibles without claims were assumed to be eligible for Medicare after studying national and state statistics on the number of SSI disabled with Medicare.

Only acute services were included in the fee-for-service database of

Medicaid costs; long term care services (skilled nursing and intermediate care facilities, and mental hospitals) were excluded. For Alabama and Maine, the Medicaid eligibles studied were cash and non-cash AFDC children and adults, SSI aged and disabled. Kentucky had small numbers of non-cash SSI so that only their AFDC eligibles were studied. Wisconsin had enrolled a large proportion of their AFDC eligibles in HMOs so only their SSI aged and disabled were included in the database.

FY 1990 base year costs per person year were calculated for each type of Medicaid eligible by age group and type of service. Fewer than 14% of all cash eligibles and fewer than 0.3% of the AFDC eligibles were classified as institutionalized or significant home health users but their costs were generally at least twice as high as for those who were not long-term care users. Overall, 70% of non-cash eligibles were institutionalized or significant home health users. The institutionalized were actually the largest type of user among the non-cash aged and disabled. The costs for the non-cash disabled institutionalized were lower than for the home health or acute care users only.

Costs differed by age group and type of service. AFDC children under the age of one and disabled children had the highest costs. AFDC males younger than 14 were generally more expensive than females. The youngest AFDC female adults were more expensive than older females. The oldest group of aged eligibles tended to have the lowest costs. Inpatient hospital was the most expensive service for AFDC eligibles and the disabled without Medicare. For the aged and disabled with Medicare, prescription drugs was the most expensive service and their physician costs as a percentage of total costs were the lowest.

The number of person years in each age/sex cell varied by eligibility category in each state. Suggested minimum cell sizes were calculated from a 90% confidence interval using the estimated mean and standard deviation. For all of the age/sex cells in the study states, the standard deviations were at least 10% higher than the mean, resulting in minimum cell sizes of at least 1200 person years. The aged and AFDC adults had the lowest standard deviations relative to the means and thus were the eligibility categories most likely to have actual person years exceeding the calculated minimum cell sizes. The highest minimum cell sizes were for AFDC children less than one year of age and disabled children. These categories had relatively small numbers of eligibles and included some very high-cost cases.
Alternative methods when the number of person years in a cell is considered inadequate are to study several years of data, combine age groups or eligibility categories with similar costs, or incorporate reinsurance in the

payments to plans.

Geographic factors were calculated by assuming that the geographic regions had the same demographic composition as the state. Maine was the smallest study state and was divided only into one urban region and one rural region. The other states had two urban regions and one rural region. Kentucky, the most rural of the four states, had the most geographic variation in costs with Louisville, the largest SMA, having the highest costs for the AFDC eligibles. In Maine, the urban counties had only slightly higher costs than rural counties. The disabled in rural Alabama had the highest costs of all disabled. The Wisconsin aged and disabled in urban counties other than Milwaukee were slightly more expensive than in other regions.

The costs of retroactive eligibles and new eligibles in the hospital who would be excluded from state managed care programs should be excluded from the base year costs. MSIS Personal Summary Records do not have adequate data to separate these eligibles so special studies would be needed to determine which eligibles would be excluded and what their costs are.

Adjustment factors were used to develop FY 1993 upper payment limits from the FY 1990 base year costs. The base year costs were adjusted to HCFA-64 expenditures to reflect actual Medicaid outlays. Adjustment factors for administrative expenses, offsetting interest income, and reinsurance programs can also be incorporated. HCFA-2082 expenditures for FY 1993 were used to calculate projection factors by eligibility category and type of service.

The actual capitation rates can be based on the upper payment limits, determined through negotiation or competitive bidding, or based on the actual costs of the plans. A common method of setting capitation rates is to use a percentage of the upper payment limit (e.g., 90% to 100%). The major types of capitation rates based on the actual costs of the plans are prospective experience rating, blended rates, adjusted community rates, actuarial matrices, and budgets.

MSIS data is currently submitted by half the states in specific formatted files. This grant has shown that MSIS Personal Summary Records can be used as the basic fee-for-service data source for calculating upper payment limits and capitation rates. After some preliminary editing, analytic files from the Personal Summary Records can be created for separate eligibility categories, types of users (institutionalized, significant home health users and those not long-term care users), age/sex cells, and geographic areas. Upper payment limits for the contract year different categories can be

calculated from the base year costs using projection factors. Additional adjustments may be made for administrative expenses, offsets for interest income, and reinsurance. Then capitation rates for managed care plans can be set as a percentage of the upper payment limit, through negotiation or competitive bidding or base on the actual costs of the plan. Procedures in rate setting would vary by state Medicaid program characteristics.

Other issues to consider in Medicaid capitation rate setting are how to treat special population groups, the possibility of selection bias, retrospective checks of capitation rates, eroded fee-for-service databases, and inadequate access to care. We did not have the data to explore these issues further but they are discussed briefly in this report.

Recommendations for HCFA include adding the Medicare indicator and more eligibility information to the MSIS Personal Summary Records and to maintain updated crosswalks of eligibility categories and type of service for the HCFA-2082 and HCFA-64 reports for each state. States should conduct routine retrospective checks on UPLs and capitation rates.

INTRODUCTION

In an effort to control costs, coordinate services, and improve access to care for Medicaid enrollees, state Medicaid programs rely increasingly on managed care plans. In these plans, the overall care of a patient is supervised by a single health care provider or organization. This supervision is intended to ensure access to quality health care as well as reduce medical expenditures by more efficient use of medical resources. The compensation structure for the provider also fosters cost savings by providing incentives for cost effective care, through prepaid capitation instead of the traditional fee-for-service payment.

Fee-for-service (FFS) refers to the traditional reimbursement for specific services provided to Medicaid recipients, which are usually based on Medicaid-approved costs or a fee schedule. Capitation refers to predetermined payments that are paid on a monthly basis per enrollee regardless of the volume or costs of the services provided. This payment structure is called a risk contract because the contractor assumes the risk that the cost of services to the Medicaid enrollees may exceed the prepaid capitation. Conversely, the contractor keeps the profit if the capitation is higher than the cost of the services provided. Therefore, the managed care plan has the incentive to provide services more efficiently.

The most common type of managed care plan is the Health Maintenance Organization (HMO). HMOs traditionally control costs by reducing the number of inpatient hospitalization days, surgical operations, and medical procedures and by obtaining discounts from providers. Additional Medicaid cost savings may be achieved from reducing emergency room visits, referrals to specialists, and inappropriate services.

As of June 1995, 7.8 million Medicaid beneficiaries were enrolled in managed care programs that were paid on a prepaid capitated risk basis, and 5.1 million of these were enrolled in 210 HMOs (HCFA Medicaid Managed Care Office). In addition, 3.6 million Medicaid beneficiaries were enrolled in primary care case management plans, some of which are partially capitated. Seven states (Arizona, Tennessee, Oregon, Hawaii, Rhode Island, Washington and Massachusetts) have enrolled the large majority of their Medicaid beneficiaries in capitated plans and other states are moving in that direction.

According to Federal regulation, Medicaid payments to the prepaid plan under a risk contract may not exceed the cost to the Medicaid agency of providing those services on a FFS basis. The capitation payments to the plans cannot exceed the cost of FFS payments for the same medical services

to a specific group of enrollees. The FFS comparison is known as the upper payment limit (UPL).

This Medicaid capitation grant was designed to develop a methodology using Medicaid Statistical Information System (MSIS) person-level data to calculate UPLs and capitation rates. The Health Care Financing Administration (HCFA) administers MSIS by collecting, managing, and disseminating state Medicaid data. States that participate in the MSIS submit claims and eligibility files quarterly to HCFA. After editing these files, HCFA generates the Personal Summary Record and HCFA-2082 Totals Files.

The first phase of the Medicaid Capitation Grant developed databases for the four states. The first objective was to establish whether the MSIS Personal Summary Records had the potential to serve as the basis for setting UPLs and capitation rates. Section I of this report describes the choice of states, reliability of MSIS data, and development of databases. FY 1990 data for four states (Alabama, Kentucky, Maine, and Wisconsin) were used to develop the databases for acute Medicaid services.

The second phase of the Medicaid Capitation Grant developed the methodology for setting UPLs and capitation rates. Section II describes the methodology of setting UPLs using MSIS Personal Summary Records. Base year costs were calculated from the MSIS databases for different eligibility categories, types of recipients, age/sex cells, and geographic areas within a state. Variability and reliability of the resulting costs were studied. Statistical methods were used to estimate minimum cell sizes. Factors were developed to adjust the data to actual expenditure data, include certain administrative expenses, incorporate reinsurance and investment income, and to project FY 1990 costs to FY 1993 costs. These factors were applied to base year costs to calculate UPLs for the contract year FY 1993.

Section III addresses the different methods of calculating capitation rates. Capitation rates may be based on the UPL, determined through negotiation or competitive bidding, or based on the actual or expected costs of the plans. Section IV discusses other issues pertinent to capitation rate setting, including special population groups, selection bias, and eroded FFS bases. Section V presents the conclusions of this report.

The three appendices include the details of the MSIS databases and adjustments. Appendix A describes the processing of MSIS data. Appendix B explains the HCFA-64 adjustments to MSIS and Appendix C explains the demographic and geographic factors. A glossary of terms is also included.

SECTION I - DATABASE FOR CAPITATION RATE SETTING

The Medicaid Statistical Information System (MSIS) was designed to provide detailed data on eligibility, expenditures, and utilization. Participation by the states in MSIS is voluntary and requires submission of detailed eligibility and claims data in specified formats to HCFA on a quarterly basis. MSIS states are exempted from submitting hard-copy HCFA-2082 statistical reports on eligibility, expenditures, and utilization. Instead, HCFA uses the state's MSIS files to create the annual HCFA-2082 reports. MSIS files are also available for research purposes.

A. Choice of MSIS States

Twenty-five states submitted quarterly Eligibility and Claims files for FY 1990. Four of these states were chosen for detailed examination of their MSIS data. The criteria for selecting the four states included:

- Quality of MSIS data
- Size of state Medicaid program
- Geographic diversity
- Extent of managed care programs

The selection of the four states for detailed study was mainly a process of elimination. The HCFA MSIS staff recommended avoiding states having major problems with adjustment claims. The data from several states appeared to have only positive adjustments. In addition, one state did not include zip code or county codes, which are optional data elements on the eligibility files. These states were excluded.

The MSIS states varied significantly in size. Experience in analyzing claims data files suggested that small states wouldn't have enough eligible persons in the actuarial categories (eligibility category, age, sex, and geographic area) to provide adequate numbers. Nine states had fewer than 100,000 Medicaid recipients in FY 1990 and were excluded for this reason.

The remaining MSIS states were considered in terms of geographic location and managed care plan enrollment. To capture geographic diversity, it was important that selected states be located in different regions. In addition, it was important to include at least one state with a significant enrollment in managed care plans in at least some parts of the state because the officials in these states would already be familiar with the problems of

calculating an upper payment limit and would have experience with problems in the FFS database. Nine of the MSIS states had managed enrollees in FY 1990.

After considering these factors, the four most appropriate states to study were Alabama, Kentucky, Maine, and Wisconsin. These states have medium-sized Medicaid programs and are located in different parts of the country. Kentucky has a managed care program which pays primary physicians a monthly case management fee but reimburses all services by FFS. Maine did not have HMO enrollees in FY 1990. Maine is developing a mandatory primary care case management system and several risk-based contracting arrangements to be expanded statewide. Alabama had a small HMO enrollment prior to FY 1990. In 1990, however, the only managed care arrangement Alabama had was a waiver program for providing obstetrical services under primary care case management for a global fee. In FY 1990 Wisconsin had a mandatory HMO program for AFDC recipients in the largest counties. Wisconsin has since enrolled other eligibility categories in HMOs.

Site visits were important to obtain specific information about the MSIS data. ARC visited the state Medicaid agencies in Alabama, Kentucky, Maine, and Wisconsin and met with financial, program and Medicaid Management Information System (MMIS) officials. We obtained crosswalks between state and HCFA categories of eligibility and types of service and details on county codes, reimbursement of providers and limits on services.

B. Reliability of MSIS Data

Before developing base year costs using MSIS data, the overall reliability of MSIS financial and enrollment data was evaluated to assure that they accurately portrayed the cost and composition of the state Medicaid program. We evaluated the reliability of the MSIS data using six types of checks:

- HCFA edits of MSIS files
- Comparison of HCFA-2082 and HCFA-64 Reports
- Comparison between consecutive years of data
- Comparison between Medicaid eligibles and cash assistance recipients
- Comparison with other state Medicaid programs
- Comparison with other data sources

1. HCFA Edits

HCFA conducts edits of the MSIS files submitted quarterly by the states. There are separate edits for the four types of MSIS files, the eligibility files, inpatient claims, long term care claims and "other" claims. The "other" claims are the most numerous, including claims for physician and other provider visits and outpatient services such as prescription drugs, radiology and laboratory tests. Most of the error tolerance limits for problems within each required variable range from 0.1% to 5.0%, depending on the importance of the variable. There are higher tolerance limits for race/ethnicity (100%) and EPSDT months (10%) and optional variables such as procedure code (100%). There are also relational edits that compare two variables but these edits are for informational purposes only. HCFA sends the validation reports to the states. If the state's MSIS files fail the edits, the state is required to resubmit the files. If the state cannot correct the errors or the data element is not considered important, HCFA may temporarily raise the tolerance limits on specific variables.

We reviewed HCFA's validation reports for these four study states summarizing the edits for FY 1990 and FY 1991. MSIS edits do not compare MSIS data with external data sources such as the HCFA-64 or with MSIS data from prior quarters. Most of the edits check for invalid codes. The main problem found in the four states was the race/ethnicity code on the eligibility files, which we did not use in developing capitation rates. There were also other problems that HCFA flagged. In Alabama as many as 13% and in Wisconsin 8% of the eligibles had a basis of eligibility that did not match the date of birth. These were AFDC children classified as adults or non-aged classified as aged. We decided that we could reclassify the basis of eligibility according to the birth date. This is described further in Appendix A.

There were other problems found in the validation reports. In Kentucky 7% of "other" claims had errors in the amount charged or quantity of service. In Alabama 0.8% of "other" claims had problems had errors in the amount charged. Since these errors did not affect the actual Medicaid payments, we did not make further adjustments. (Some of the states had high errors of 20% or more for variables such as diagnosis and procedure codes which were not used in this study.)

2. Comparison between HCFA-2082 and HCFA-64 Reports

We analyzed expenditures as reported on the HCFA-2082 Statistical Report and the HCFA-64 summary of Quarterly Medicaid Statements of Expenditures for each state. The HCFA-2082 is an annual summary report of

expenditures and utilization generated by using the MSIS files. The HCFA-64 financial reports are quarterly financial accounting reports that document actual Medicaid expenditures by a state. They are considered accurate measures of expenditures because they are the basis for Federal matching payments for state Medicaid expenditures and are subject to Federal audit for appropriateness of reimbursement. However, the classifications for the two reports differ in several ways so that direct comparison is not completely valid. Unlike the HCFA-2082, the HCFA-64 does not disaggregate expenditures by eligibility category or include data on enrollees, recipients, and utilization. The HCFA-2082 contains more detailed information on expenditures by eligibility category and service. But the HCFA-64 expenditures include a number of adjustments to payments that are not reflected in HCFA-2082 data, since these adjustments are not reported on a per beneficiary basis. For example, many states make adjustments to the claim amounts to match the reasonable costs of an institutional provider (hospitals, etc.). There are also adjustments for third party liability, fraud and abuse, Federal audits, and probate settlements.

We obtained the HCFA-64 reports for the four quarters of FY 1990 for the study states. Line 6 of the HCFA-64 shows the current quarter expenditures by type of service. Line 7 shows the expenditures for prior quarters (in the current or prior fiscal years) by type of service. Lines 9 and 10 contain increases or decreases in expenditures from settlements with providers in the current or prior years. Adjustments which are not allocated by type of service were assigned by using the percentage share of each service. For instance, if inpatient hospital totaled 35% of all expenditures, 35% of the unallocated decreasing adjustments would be subtracted from inpatient hospital.

Three of the states reported significant expenditures for Medicare deductibles and copayments ($11 million to $37 million) paid on behalf of Medicaid beneficiaries as separate items on the HCFA-64, not separated by type of service. Since the HCFA-2082 expenditures by service include Medicare deductibles and coinsurance, these cost sharing payments were allocated by service using the HCFA-2082 Section L distribution of Medicare deductibles and copayments by type of service.

We obtained crosswalks between HCFA-2082 and state service categories and discussed the differences between expenditures on the HCFA-2082 and HCFA-64 reports with state officials responsible for those reports. Some discrepancies were the same for all four states. For example, the HCFA-2082 contained only one category for home health, but the HCFA-64 divided these expenditures between the categories of home health and home

and community-based waivers. The expenditures for family planning and sterilization were lower on the HCFA-64 report than on the HCFA-2082 because some of the expenditures were allocated to specific services such as inpatient hospital, physician, and outpatient hospital services on the HCFA-64.

Other discrepancies between the HCFA-2082 and HCFA-64 were the result of individual state reporting conventions. Alabama required patient copayments for inpatient hospital, physician, outpatient, clinic, or drugs. We added the copayments to the HCFA-64 expenditures because Alabama did not require copayments for HMO enrollees as it did for FFS. Kentucky included case management fees for physicians on the HCFA-64 but not the HCFA-2082. Kentucky also included a large portion of lab and x-ray expenditures in the physician and outpatient hospital categories on the HCFA-64 but reported them separately on the HCFA-2082. Maine reported inpatient and outpatient hospital charges on the HCFA-2082 but reported the actual Medicaid payments on the HCFA-64. Lab and x-ray expenditures were included in Maine's HCFA-64 physician expenditures. Details of these differences are explained in Appendix B.

The HCFA-2082 expenditures for FY 1990 by date of payment (as usually reported by HCFA) were compared to the unadjusted current quarter HCFA-64 expenditures and after adjustments for prior quarters, settlements with providers, and Medicare cost-sharing. The comparisons by each service in each state are also shown in Appendix Tables B.1 through B.4.

Overall, the HCFA-2082 expenditures matched the HCFA-64 expenditures as much as would be expected, given the differences in definitions, adjustments not recorded on the HCFA-2082, etc. As shown in Table A, the unadjusted differences in total expenditures for two of the states were within 1% and the difference was 6.7% for another state. Alabama's HCFA-2082 expenditures, however, were substantially lower than the HCFA-64 because the HCFA-2082 report did not include hospital donations and disproportionate share payments which were relatively large and paid to most of the hospitals in the state. After adjusting for these and other expenditures, the differences in total expenditures in three of the states were within 2.1%. The difference for Wisconsin narrowed somewhat to 6.1%. (Wisconsin's HCFA-64 included payments that could not be allocated by type of eligible and which were not included on the MSIS claims.)

Table A
HCFA-2082 and HCFA-64 Current Quarter Expenditures, by State: FY 1990

State	HCFA- 2082 Expenditures(in millions)	Unadjusted HCFA-64 (in millions)	Percent Difference (unadjusted)	Adjusted HCFA-64 (in millions)	Percent Difference (adjusted)
Alabama	$609	$765	-20.4%	$608	0.2%
Kentucky	$977	$986	-0.9%	$974	0.3%
Maine	$431	$429	0.5%	$423	2.1%
Wisconsin	$1,248	$1,338	-6.7%	$1,329	-6.1%

Because the adjusted HCFA-2082 expenditures were close to the HCFA-64 expenditures, we can be reasonably sure that there were no major missing providers or services in MSIS. Although specific services varied significantly in the two reports because of different definitions and adjustments, the total expenditures on the two reports were similar enough to conclude that 2082 data is suitable for capitation development if adjustments are made to match the HCFA-64 expenditures.

3. Comparison between FY 1990 and FY 1991

Another test of the reliability of the MSIS data is to compare two consecutive years of data. The following table summarizes the increases in HCFA-2082 (by date of payment) and HCFA-64 expenditures from FY 1990 to FY 1991.

As Columns A and B in Table B illustrate, the increases in total expenditures for the HCFA-2082 and HCFA-64 were very similar for both Alabama and Wisconsin. Alabama reported disproportionate share payments in both FY 1990 and FY 1991. Wisconsin reported relatively low disproportionate share payments in FY 1991. There were significant discrepancies for Kentucky and Maine (22.9% vs. 50.0% and 24.4% vs. 34.2% respectively), largely attributable to disproportionate share payments. In FY 1990, Kentucky and Maine did not report hospital disproportionate share payments on either the HCFA-2082 or the HCFA-64. In FY 1991, these states started including disproportionate share payments on the HCFA-64 but not on the HCFA-2082. This change in reporting caused the

Table B
FY 1990-91 Increases in Expenditures by State:

	Column A HCFA-2082 total $	Column B HCFA-64 total $	Column C HCFA-2082 without I/P	Column D HCFA-64 without I/P
Alabama	32.2%	33.1%	32.7%	32.4%
Kentucky	22.9%	50.0%	27.2%	26.9%
Maine	24.4%	34.2%	24.9%	21.0%
Wisconsin	17.9%	16.7%	16.8%	15.4%

HCFA-64 expenditures to "grow" faster than the HCFA-2082 expenditures. For all four states, once inpatient hospital expenses were excluded, the increases in the HCFA-2082 expenditures were within a few percentage points of the increases in the HCFA-64 (Columns C and D of Table B).

A separate comparison by type of service showed that the increases in the HCFA-2082 expenditures mostly followed the pattern for the increases in the HCFA-64 report. But major differences in how services are defined for the two reports make it difficult to compare changes by type of service.

4. Comparisons between Medicaid Eligibles and Cash Assistance Recipients

All cash recipients of the AFDC and SSI aged, disabled and blind programs were eligible for Medicaid in the four states. The average monthly number of Medicaid eligibles who received cash assistance was compared with the average numbers of AFDC and SSI recipients as shown in Table C. In most categories the number of Medicaid eligibles was slightly more than the number of cash recipients. Some of the difference may be due to extended eligibility for Medicaid for six or twelve months after persons are no longer eligible for cash assistance if the eligibility category was not immediately changed from categorically needy receiving cash assistance to those not receiving cash assistance.

Table C
Medicaid Eligibles Who Receive Cash Assistance by State:
FY 1990

State	Number of Federal cash recipients	Number of Medicaid eligible years from HCFA-2082	Difference
AFDC			
Alabama	129,998	130,850	0.7%
Kentucky	175,421	185,090	5.5%
Maine	56,009	58,030	3.6%
SSI Aged			
Alabama	50,804	50,517	-0.6%
Maine	6,966	6,986	0.3%
Wisconsin	21,956	22,541	2.7%
SSI Disabled			
Alabama	80,162	82,925	3.4%
Maine	16,061	16,514	2.8%
Wisconsin	60,800	63,454	4.4%

The number of AFDC cash recipients was calculated using the average monthly AFDC recipients from the Office of Family Assistance. SSI cash recipients were calculated as the average of the quarterly FY 1990 SSI recipients published in the Social Security Bulletin.

5. Comparison with Other State Medicaid Programs

Detailed information on eligibles, expenditures and utilization was not readily available for all states so we could not compare the four study states with Medicaid national averages. To provide some basis for assessment, we compared the four study states with four other MSIS states. Vermont, Minnesota, Louisiana, and South Carolina were selected because they were geographically close to the study states. Hard copy HCFA-2082 reports by date of payment for the categorically needy receiving cash assistance were used for Minnesota, Louisiana, and South Carolina while MSIS data was used for Vermont. (Minnesota participates in MSIS but also submitted hard copy reports.)

The study and comparison states had similar age distributions,

distributions of Medicaid expenditures by services, expenditures per eligibles, and ratios of recipients to eligibles. Between 6% and 10% of all AFDC children were infants, about a third were aged 1-5, between 38% and 47% aged 6-14, and between 9% and 16% were aged 15-20. Between 79% and 94% of all AFDC adults were aged 21-44. The comparison states had somewhat younger groups of aged Medicaid beneficiaries. The share for the oldest age group of the aged (85+) was between 16% and 22% for the comparison states and between 19% and 26% for the study states. The share for the disabled ranged from 32% to 47% for the age group 21-44 and 30% to 39% for the age group 45-64.

There was more variability among the comparison states than the study states with respect to the distribution of Medicaid expenditures by type of service. Medicaid expenditures per eligible varied by eligibility category and geographic region but total acute expenditures fell into similar ranges ($36 to $67 for AFDC children, $84 to $153 for AFDC adults, $87 to $163 for aged, and $154 to $415 for disabled). The ratios of recipients to average eligible years were similar for the two groups of states (0.91 to 1.18) although there were more variations by type of service. South Carolina had incomplete numbers of recipients so it was not included in the analysis of recipients.

The comparison of the study states with four other states shows that the study states were fairly typical and that the MSIS data were reliable. We did not uncover any inconsistencies in the MSIS data that would require adjustments or deletions except for the edits previously described for coding of age group and eligibility category.

6. Comparison with Other Data Sources

We attempted to compare MSIS data with other state sources. We found this to be difficult since three of the states use a different fiscal year than the Federal government. We reviewed state FY 1990 data from Kentucky and state FY 1991 data from Maine and found no significant discrepancies that would lead us to believe that MSIS data are incomplete or inaccurate. None of the four states reported major differences in the tabulation of expenditures on reports that are generated for their own use and reports required by HCFA.

7. Overall Reliability of MSIS Data

The MSIS data from the four study states were compared to other available financial and enrollment data. Although there were discrepancies by type of service due to differences in categorizing claims data, the overall

MSIS expenditures were within 0.2% to 6.1% of the HCFA-64 expenditures upon which Federal payments to states were based. The number of MSIS cash eligibles differed from Federal cash recipients by -0.6% to 5.5%. Comparisons of the distributions of expenditures and eligibles with four other states showed no significant anomalies. We therefore concluded that the MSIS data were sufficiently reliable to develop capitation rates. For any specific state, researchers should be alert to differences between MSIS and other data sources.

C. Creating a Database from MSIS

MSIS states submit quarterly claims and eligibility files to HCFA. From these quarterly claims, HCFA creates three types of files: (1) year-to-date files on paid claims and eligibility, (2) the HCFA-2082 Totals files, and (3) Personal Summary Record files. The Personal Summary Records summarize the claims (by type of service) and eligibility data for each Medicaid eligible for the fiscal year. Using the Personal Summary Records instead of the year-to-date files greatly reduces the number of claims to be processed. For instance, in the fourth quarter of FY 1990, Alabama had 18,300 inpatient claims and 2.1 million claims for "other" services (not inpatient or long term care) compared to a total of 393,000 eligibles.

Each record of the Personal Summary Records files describes an individual and provides demographic information, Medicaid eligibility information, and medical expense information for a particular fiscal year. Eligibility refers to the number of months in the fiscal year that a person was eligible for Medicaid. Demographic information includes date of birth, sex, and county of residence.

1. Eligibility Category

MSIS includes two Medicaid eligibility categories for each Medicaid eligible: Maintenance Assistance Status (MAS) and Basis of Eligibility (BOE). Because the different MAS and BOE codes classify individuals into groups with distinctly different medical expenditures, understanding the categories is vital. The classification of individual Medicaid eligibles is not consistent across states. States are not required to cover all eligibility categories. Income and asset requirements for eligibility categories differ by state. Also, similar individuals classified under one eligibility category in one state may be classified under another eligibility category in a different state.

There are five Maintenance Assistance Status (MAS) codes:

(1) categorically needy, receiving Federal cash assistance (also known as cash eligibles)
(2) categorically needy, not receiving Federal cash assistance (also known as non-cash eligibles)
(3) medically needy
(4) other coverage groups created by legislation effective prior to 1988
(5) coverage groups created by the Medicare Catastrophic Coverage Act of 1988 and later legislation.

There are six Basis of Eligibility (BOE) codes:
(1) aged
(2) blind
(3) disabled
(4) children
(5) caretaker relatives and pregnant women
(6) other Title XIX eligibles.

In this report we only analyzed data for the cash (MAS = 1) and non-cash eligibles (MAS = 2). These maintenance assistance categories were the most likely to be included in capitated programs. The medically needy and other coverage groups are generally enrolled in Medicaid for shorter time periods and when they have medical problems. (From a capitation perspective, the eligible months are only partially reported.) In this report we did not include the blind (BOE = 3) and other Title XIX eligibles (BOE = 6). There are relatively small number of blind eligibles. A state may choose to combine the blind with the disabled or have a separate category for the blind if there are sufficient numbers of blind eligibles for capitation purposes.

For non-cash eligibles, the other Title XIX category (MAS = 2, BOE = 6) may include persons who meet AFDC or SSI requirements except for income or may include other groups such as refugees and foster children. This category also differs greatly by state. Kentucky had no other Title XIX eligibles under the non-cash category but the other states reported between 5,400 and 13,400 eligibles with this maintenance assistance status and basis of eligibility.

For this study analytic databases from the MSIS files were developed for AFDC, SSI aged and SSI disabled Medicaid enrollees who were categorically needy (cash and non-cash) in Alabama and Maine. Only the AFDC eligibles were analyzed in Kentucky because their non-cash SSI population was small. Only the SSI aged and disabled were included in the database for Wisconsin because many of the AFDC eligibles were enrolled in

HMOs (and therefore lack FFS data).

If the state is enrolling Medicaid eligibles other than cash eligibles, it is important that the state's eligibility categories for managed care plans match those in MSIS if MSIS is to be the main data source. For example, the state may have different definitions for non-cash eligibles than what is tabulated for MSIS.

2. Type of Service

Medical expense information was provided for 21 different types of services, including both acute and long-term care services (services in mental hospitals and skilled nursing and intermediate care facilities). Long-term care services are less likely to be capitated because it is harder for health plans to manage the care of individuals in long-term care institutions and there is less experience with calculating their capitation rates. We included the eleven acute Medicaid services that are likely be considered for capitation rate setting:

(1)	inpatient hospital	(7)	home health
(2)	physician	(8)	Laboratory and x-ray
(3)	outpatient hospital	(9)	EPSDT
(4)	prescription drugs	(10)	rural health
(5)	other practitioners	(11)	other care
(6)	clinic		

Home health services were only included for those persons not institutionalized or considered significant home health users. Dental and family planning were excluded because these services are often delivered outside the managed care plans.

3. Incurred Data

Personal Summary Records are usually created by MSIS based on date of payment (i.e., on a cash basis). On this basis FY 1990 Personal Summary Records would include all the claims paid in FY 1990 no matter when services were performed. Since the health plan would be paid capitation rates on the basis of services performed in the fiscal year whether or not paid in the same fiscal year, incurred claims would provide a more appropriate measure of expenses than paid claims. For the purposes of this study, the HCFA MSIS staff created incurred FY 1990 Personal Summary Records by summing the claims performed in FY 1990 which were paid in FY 1990 or FY 1991 for each eligible in the spring of 1992. Most states limit submission of claims by

providers to Medicaid to six or twelve months after services are provided, so the vast majority of claims for services performed in FY 1990 would be paid by a year after the end of the fiscal year. It is possible that a few claims were paid after FY 1991, but FY 1992 and later data were not available at the time.

If claims data are only tabulated by date of service, incurred data can be estimated from payment lags. If it is known that 95% of all claims have historically been paid by the end of the fiscal year, then the adjustment factor is 105.3% (1 ÷ 0.95). If $1,000,000 were paid in FY 1990 for services provided in FY 1990, incurred claims are estimated to be $1,053,000. Since inpatient hospital claims have a longer lag than most other services, separate payment lags should be calculated for inpatient vs. other services. Separate payment lags may also be calculated for outpatient hospital, physician, prescription drug, etc., if warranted.

There are advantages and disadvantages to using incurred claims vs. cash claims. Incurred claims more closely match capitation reimbursement but require more time (six months to one year or more) to accumulate. Historic lag factors can be calculated in a more timely fashion but may not accurately reflect more recent payment policies and accounting procedures.

4. Edits

Total expenditures and eligibles from the MSIS Personal Summary Records were checked against the HCFA-2082 summaries. Some individual MSIS records may have been excluded in the calculation of HCFA-2082 totals or some other adjustments may have been made. In addition, it is recommended that any individual records with expenditures more than $100,000 or $200,000 should be investigated. Inclusion of these specific records could affect the per eligible costs disproportionately.

Data from the Personal Summary Record Files for a full year were used to calculate costs per eligible year. This year is called the data year. Records which fail the following edits should be excluded:

a. Date of death before the beginning of the data year
b. Date of birth after the end of the data year
c. Invalid date of birth or death
d. Date of death occurring prior to date of birth
e. HMO payment noted on the record
f. No months of eligibility noted on the record

Records with invalid dates of birth or death are unreliable and should be excluded. If HMO payments are noted on a Personal Summary Record, all claims data for that individual should be excluded because the claims are incomplete and would not include any HMO services. Eligibility months for such a person should also be excluded.

Several coding errors can be corrected by imputing a reasonable value from the available data rather than excluding the entire record. For example, if the sex is invalid, a code can be imputed depending on BOE. For AFDC adults with unknown sex, the sex was assumed to be female. For the aged, sex was assigned according to the percentage female observed in the data. For instance, if 60% of the aged eligibles with known gender are female, the computer program should randomly assign 60% of the records with unknown sex or invalid sex code as female. Unless the state has other information, it is assumed that the date of birth is more reliable than eligibility category coding. Therefore, all children over the age 20 were reclassified as adults. Aged individuals under the age 65 were reclassified as disabled. (HCFA confirmed that a person receiving SSI disability payments who is married to a person receiving SSI aged payments may be listed as an aged person under Medicaid. However, it would be more appropriate to list this person as a disabled enrollee for capitation rate setting purposes.) Details on these edits for each state are described in Appendix A.

5. Institutionalized and Significant Home Health Users

Those eligibles residing in long-term care institutions or enrolled in home and community-based waiver programs may have different patterns of expenditures and utilization of services than other eligibles. Also, most states have not included these eligibles in managed care plans for acute services. Therefore, we developed separate capitation rates for the acute services of institutionalized, significant home health users and those not long term care users (non-LTC users, anyone not included in the first two groups).

A Medicaid eligible was considered institutionalized if either expenditures or utilization for types of service related to long-term care exceeded a minimum level. These long term care services were those in mental hospitals and skilled nursing and intermediate care facilities. A Medicaid eligible was considered a significant home health user if either utilization or expenditures for home health exceeded a different minimum level. We used 100 days of institutionalization (which follows the HCFA definition for the HCFA-2082) and 50 home health visits or their dollar equivalent as the minimum levels. All eligibles not considered either institutionalized or significant home health users were considered non-LTC

users. More details on these categories are explained in Appendix A.

6. Medicare status

A person who is eligible for Medicaid may also be eligible for Medicare. This person is called "dually eligible," and Medicare provides the primary coverage for that individual. Medicaid is only responsible for Medicare deductibles and coinsurance, services not covered by Medicare, and portions of the cost of services beyond Medicare coverage limits for these dual eligibles. Therefore the expenditures in the MSIS database for individuals who are dually eligible are expected to be much lower than they would have been if the person had relied only on Medicaid for health insurance.

At this time, the MSIS Personal Summary Records do not include an indicator of dual eligibility (which is included on the MSIS Eligibility files). For individuals who have received Medicaid services that are also reimbursable under Medicare, dual eligibility can be detected because Medicare expenditures are included on the Personal Summary Record. However, there is no way to determine whether an individual who uses no services (or very limited services) during the data year is dually eligible. For the aged, this is not much of a problem because the majority of aged persons are eligible for Medicare. Similarly, so few of the AFDC adults and children would be eligible for Medicare that they can be assumed not to have Medicare coverage. For the disabled, there is no easy assumption. Only 36% of SSI disabled recipients nationwide received Social Security benefits in December 1989 (Social Security Bulletin Annual Statistical Supplement 1990). Additionally, the disabled receiving Social Security benefits are not eligible for Medicare until after a two-year waiting period.

We used the state data on the percentage of SSI disabled recipients receiving Social Security benefits and the national data on the percentage of disabled Social Security recipients receiving benefits for at least two years to estimate what percentage of SSI disabled Medicaid eligibles have Medicare. According to this data, all of the eligibles without claims should be classified as dual eligibles. This is explained in more detail in Appendix A.

7. Age and sex groups

Age groups were calculated directly from the date of birth noted in the Personal Summary Record, using age as of the middle of the fiscal year. Age groups should be selected according to basis of eligibility in order to provide reasonable numbers of exposure (member months) within each age group. The age groupings used for the HCFA-2082 are:

Basis of Eligibility	Age Groups				
Aged	65-74	75-84	85+		
Disabled	< 6	6-20	21-44	45-64	65+
Children	< 1	1-5	6-14	15-20	
Adults	<21	21-44	45+		

If the state is large, more age groups may be used. If the state or region within the state is relatively small, age groups may need to be combined. Adults are generally the head of household so an adult can be under age 21. However, children who later become heads of households may not have their basis of eligibility changed on the record. Since heads of households are more likely to have higher costs than children, updated codings for adults would be preferable. There can be significant differences in costs for males compared to females. Therefore, it is recommended that separate capitation rates be calculated by sex. If the differences are small for specific eligibility categories and age groups, unisex rates can be used.

8. Geographic Regions

County codes and zip codes are included in most state MSIS databases. These can be used to capture regional variations in per capita expenditures. At a minimum, an urban/rural breakdown is expected in small states. Additional urban areas may be used where there are a number of metropolitan areas in a state. For large cities or counties, zip codes could be used to further divide. The geographic regions chosen would depend on where the managed care program will operate, the number of eligibles in a region and differences in per capita costs among regions. The counties and Statistical Metropolitan Areas (SMAs) used to determine urban and rural regions in each state are described in Appendix A.

SECTION II - CALCULATING UPPER PAYMENT LIMITS

Under Federal regulations, capitated Medicaid payments may not exceed the cost of providing Medicaid services on a FFS basis. The estimated FFS cost of providing Medicaid services to managed care enrollees is the upper payment limit (UPL). The capitation payment may not exceed the UPL and may be set lower than the UPL by the state. The UPL for the contract year is generally estimated from the base year FFS costs in a prior year. The UPL is calculated from the base year costs adjusted for financial settlements and projected to the contract year. Adjustments may also be included for administrative expenses, interest offset, and reinsurance.

There are two types of per capita base year costs that may be needed:

(1) The average per capita expenditures for beneficiaries of a particular type while eligible for Medicaid

(2) The average per capita expenditures during the periods in which they will be enrolled in a health plan.

The upper payment limits designated in HCFA regulations relate to the latter. A more comprehensive test of how the cost of a managed care program relates to a FFS program, however, must also take into account the portions of eligibility during which payment will be on a FFS basis. The primary time periods are:

- From the date on which eligibility is established to the date on which enrollment in a managed care plan is effective
- Any additional retroactive eligibility periods.

We will first discuss the derivation of the program wide per capita costs first (i.e., (1) above), and then discuss the steps required to derive the upper payment limits relative to them.

The primary steps are to (I) derive base year costs, (ii) adjust to match the HCFA 64 totals and (iii) project the per capita costs to the year to which they will apply. The FY 1990 base year costs calculated from FY 1990 FFS data were adjusted to match HCFA-64 actual expenditures and projected to FY 1993 to produce average per capita costs for these types of beneficiaries. Additional adjustments can be made for administrative expenses, offsets for investment income, and reinsurance.

A. Base Year Costs, FY 1990

Base year costs were calculated using FY 1990 incurred FFS costs from the MSIS Personal Summary Records. Base year costs were calculated separately for each MAS (cash and non-cash eligibles) and BOE (children, adults, aged, disabled with Medicare, and disabled without Medicare) and type of Medicaid user (institutionalized, significant home health user, and non-LTC user). In this report, we display the base year costs as expenditures per person year for ease of comparison with person years. (States usually pay managed care plans on a monthly basis. Costs per person year can be converted to costs per eligible month by dividing by 12.) The base year costs for all four states are displayed in Figure 1.

For any of the five eligibility categories in any of the states, fewer than 14% of all cash eligibles were classified as institutionalized or significant home health users (LTC users), as shown in Table D. For the children and adult AFDC categories in any of the three states, no more than 0.5% were LTC users. The small number of AFDC LTC users had 1.7 to 24 times higher expenditures than the overall state averages.

From 0.1% to 5.9% of aged and disabled cash eligibles in the three states were institutionalized. From 3.4% to 8.3% of aged and disabled cash eligibles were significant home health users. Costs for the SSI aged and disabled institutionalized and home health users were 0.8 to 2.9 times higher than the state averages. Maine had relatively fewer aged and disabled cash eligibles who were LTC users (6% or fewer).

There were relatively more LTC users among non-cash eligibles than among cash eligibles. This is because many persons who would otherwise be eligible for SSI cannot receive SSI cash payments when residing in institutions or enrolled in home and community-based waivers. Also, there is a higher Medicaid income limit for the institutionalized. These persons may receive Medicaid as non-cash eligibles. The number of LTC eligibles was very small among the AFDC children and adults but they were much more expensive, ranging from 2.4 to 60 times the average. In each of the three states, more than 75% of the aged non-cash eligibles were institutionalized. Maine had a smaller percentage of their disabled eligibles (Medicare and non-Medicare) institutionalized (32% and 38%) than Alabama (79% and 75%) and Wisconsin (77% and 62%). The aged and disabled institutionalized with Medicare had costs similar to the state averages. The disabled without Medicare who were institutionalized had costs that were 50% to 80% of average costs. There were a small number of home health users among the aged and disabled (0.5% to 8.6%)

Table D

Distribution of eligibles and relative cost, by type of Medicaid enrollee and state: FY 1990

	Distribution of Eligibles			Relative Costs		
Type of Medicaid user	Institutional residents	Significant home health users	Non-LTC users	Institutional residents	Significant home health users	Non-LTC users
Cash eligibles						
Children						
Alabama	0.0%	0.0%	100.0%	4.765	1.7%	0.999
Kentucky	0.2%	0.3%	99.5%	9.786	20.800	0.919
Maine	0.2%	0.1%	99.8%	13.136	23.578	0.967
Adults						
Alabama		0.0%	100.0%		5.736	0.998
Kentucky	0.0%	0.3%	99.7%	15.569	8.635	0.977
Maine		0.0%	100.0%		9.508	0.999
Aged						
Alabama	3.1%	8.3%	88.7%	1.842	1.403	0.933
Maine	0.3%	4.9%	94.9%	1.978	1.878	0.952
Wisconsin	5.8%	8.3%	85.9%	1.889	1.972	0.846
Disabled with Medicare						
Alabama	1.9%	6.4%	91.7%	2.102	1.501	0.942
Maine	0.1%	3.4%	96.6%	1.781	1.734	0.974
Wisconsin	4.6%	6.0%	89.5%	1.575	2.231	0.889
Disabled without Medicare						
Alabama	2.7%	5.1%	92.2%	0.847	1.262	0.990
Maine	0.4%	5.5%	94.1%	2.316	1.263	0.979
Wisconsin	5.9%	4.2%	89.9%	1.175	2.863	0.901
Non-cash eligibles						
Children						
Alabama	0.0%	0.0%	100.0%	2.403	14.983	0.998
Kentucky	0.1%	0.1%	99.7%	14.021	14.624	0.961
Maine	0.5%	0.1%	99.4%	14.147	10.877	0.923
Adults						
Alabama	0.0%	0.0%	100.0%		3.502	1.000
Kentucky	0.0%	0.2%	99.8%		3.448	0.995
Maine	0.0%	0.1%	99.9%		60.515	0.954

	Distribution of Eligibles			Relative Costs		
Type of Medicaid user	Institutional residents	Significant home health users	Non-LTC users	Institutional residents	Significant home health users	Non-LTC users
Aged						
Alabama	88.9%	0.5%	10.7%	1.029	1.273	0.744
Maine	75.1%	3.0%	21.9%	0.909	1.103	1.299
Wisconsin	85.2%	1.6%	13.3%	1.043	1.207	0.701
Disabled with Medicare						
Alabama	79.3%	1.2%	19.5%	0.945	1.212	1.213
Maine	37.6%	8.6%	53.7%	1.099	0.987	0.933
Wisconsin	76.9%	3.2%	19.9%	1.001	1.500	0.913
Disabled without Medicare						
Alabama	75.4%	2.0%	22.6%	0.538	1.484	2.496
Maine	32.2%	3.7%	64.1%	0.505	1.876	1.198
Wisconsin	61.5%	5.2%	33.3%	0.792	1.481	1.310

with costs up to 1.9 times more expensive than average. The differences in Medicaid acute costs for LTC users vs. non-LTC users imply that separate rates should be considered.

Tables 1 and 2 show the mean costs per person year, number of person years, and standard deviations by user type, MAS, and BOE in each state. Alabama had the lowest base year costs by far in every eligibility and user category except for non-cash children and adults. Alabama's acute costs for the aged and disabled were only 21% to 57% of Maine and Wisconsin costs. The costs for Alabama's cash and non-cash adults were relatively higher, ranging from 83% to 246% of the costs of Maine and Kentucky). This may be due to Alabama's global fees for a required number of physician visits for maternity services.

B. Determining cell size

The number of rating cells should always reflect (I) significant differences in the cost to treat enrollees with different objective characteristics (i.e., MAS, BOE, area of residence, etc.) and (ii) the potential for health plans to attract significantly different proportions of such enrollees. The important consideration is that no plan be placed at a competitive disadvantage as a result of attracting a disproportionate share of enrollees that are more expensive to treat, at least as long as the differences are

measurable. Rating cells can be adjusted to reflect the composition of actual enrollments prospectively or retrospectively. The impact of selection may also be reduced through measures such as reinsurance, pooling or health status adjustment.

The primary consideration is to avoid providing an incentive and a financial reward for biased selection by the plans. For this reason, the number or types of cell for payment rates should not be solely limited by data considerations, but rather the best sources and methods must be found to prepare estimates for the cells needed. In a highly competitive system, even relatively small differences in the costs of enrollees could produce substantial competitive advantages, resulting in plans that succeed through luck or selection, rather than skill in managing care.

The problem of cell size must thus be analyzed from the perspective of obtaining reliable estimates of the relative cost for classes of beneficiaries for whom health plans will be paid different rates. By reliable is meant that the estimate must meet the desired standards for precision and confidence, e.g., a probability of 95% that the estimated rate is within 5% of the actual difference in cost. The key question addressed here is how large the number of eligible years must be in order to obtain sufficiently reliable estimates of the cell means relative to the average for all beneficiaries of a general type (e.g., AFDC adults, aged etc.)

There do not appear to be any generally accepted rules among the states concerning the minimum size of cells or whether age and sex are used for capitation rating. The Pennsylvania Medicaid program for the Philadelphia area has separate capitation rates for each of six counties for the SSI blind, although there are fewer than 600 total eligibles. In California, if a particular aid category has fewer than 100 enrollees per month, no adjustment is made for age or sex. Arizona has capitation rates only by eligibility category. Wisconsin also does not rate by age and sex.

Statistical methods can be used to determine the minimum size for age/sex cells or at least show which cells may be questionable. The variability of the base year costs in each cell affects how much data is necessary to achieve a specified level of confidence. The greater the variability of the base year costs in a cell, the more person years of data that are necessary. For this reason, we calculated the mean expenditures per eligible year and standard deviation for each cell. This information is displayed in the tables in Appendix A (A.1 through A.30).

The minimum number of person years required for 90% confidence that

the true mean lies within 5% of the estimated mean can be calculated from:

$$n = ((1.645 * \text{standard deviation}) \div (0.05 * \text{sample mean}))^2$$

If the standard deviation is equal to the sample mean, this implies a cell size of 1,082 to be 90% confident that the true mean lies within 5% of the estimated mean. (A 95% confidence interval would require a minimum cell size of 1,537.) If the costs per eligible have more variation (with the standard deviation greater than the sample mean), the minimum cell size would have to be larger than 1082.

Tables in Appendix A show the minimum cell size for 90% and 95% confidence intervals for the four study states by age group, user type, MAS, BOE, and sex. Four categories (Alabama aged cash home health, Alabama aged non-cash institutionalized, and Wisconsin aged cash and non-cash institutionalized) had the lowest variation and thus the lowest minimum cell sizes (between 1200 and 1300 person years). All of the cells had standard deviations that were at least 10% higher than the sample means. Since the lowest cost is limited to $0 and cannot be negative, this means that the distributions of costs per eligible are skewed toward low costs, with small numbers of eligibles with very high costs.

The highest minimum cell sizes were for children under one year of age and disabled children under six years of age and 6 to 20 years of age. These categories have small numbers of eligibles overall and include some base year costs for individuals greater than $100,000. Next to the aged, AFDC adults had the lowest minimum cell sizes, reflecting their relatively stable costs.

For many of the age/sex cells, the actual number of person years in the data exceeded the calculated minimum cell sizes. For these age/sex cells we can be reasonably confident that the calculated mean base year costs will be adequate to use as a basis for determining UPLs.

For this study, only one year (FY 1990) of cost data was available. If available, several years of data should be studied to evaluate stability of costs, especially for cells with inadequate data in the base year. High acute costs (e.g., more than $50,000 or $100,000) for relatively small numbers of eligibles account for much of the variation. Reinsurance (which is discussed later in this report) would reduce the mean and standard deviation, which would also reduce the minimum number of eligibility years required for a 90% confidence interval.

When the number of person years in a cell is smaller than the

suggested minimum cell sizes, a frequent alternative is to combine two or more age groups or even eligibility categories with similar costs such as cash and non-cash eligibles. The institutionalized, significant home health users, and non-LTC users may be combined in one category when their acute costs are fairly similar. Although the costs of the institutionalized ($2041) and the home health users ($747) were significantly higher than the costs of the non-LTC users ($428) among the cash children in Alabama, combining these three groups does not increase the cost per capita of the non-LTC users because there were very few of the other types of users, (as seen in Table 1).

Sometimes, however, the costs for different types of Medicaid users may not only be very dissimilar but have a significant impact on the average cost. For example, there are relatively few institutionalized and home health users among AFDC children and adults in Maine, but their costs are more than 13 times higher than the costs for non-LTC users. Even when inclusion of very high cost groups does not increase the cost per capita for a payment cell, a state should consider the potential problems of both statistical fluctuation and biased selection very carefully.

If a state is satisfied that it can manage the enrollment process in a manner that only random fluctuations are a problem for the health plans, then reinsurance could provide an adequate protection. But it may be more prudent to create separate payment cells for these high cost beneficiaries, thus eliminating the financial incentives for biased selection. It should be noted that health plans with close relationships to physician providers have an almost unlimited number of ways to encourage high cost patients to leave, far more opportunity than can ever be addressed by monitoring the enrollment process.

If the numbers of eligible months are insufficient for some cells, two or more cells can be combined and another analytic method used to obtain estimates of the individual cell means. One such method is indirect adjustment, in which average marginal relationships are imputed for similar cells. This technique is particularly effective when the source of the variation is systematic and uniform, e.g., the effect of geographic area on the relative costs (because of differences in payment rates which may be influenced by differences in actual costs) for different demographic cells. Another approach is to use data from another source as a model to estimate similar types of variation. For example, data compiled from a large state may be used as the base for calculating a tabular (or modeled) cost for a collection of cells large enough for a stable estimate of the mean. Then all individual cell estimates can be adjusted by the overall ratio of the actual mean to the sum of the

means estimated by the model. An example of using the statewide rates and relative differences by age group is included in a study of setting capitations for Brooklyn, New York (Leibowitz and Buchanan). If cells must be combined, it is preferable to combine those with most similar costs or those for which an indirect adjustment method will introduce the least bias.

C. Demographic Factors by Type of Service

Costs per eligible vary by demographic characteristics of the eligible (age, sex, and eligibility category). One of the most important steps in setting rates is to determine factors by type of service. Demographic, geographic and trend factors (projection factors to a future time period) are likely to differ by type of service. The acute services were separated into different types of services:

- inpatient hospital
- outpatient hospital
- physician
- prescription drugs
- all other acute services

By separating the services, cost differences among different categories of eligibility can be analyzed. Also, managed care plans may only be capitated for some of these services, e.g., all outpatient services.

Costs varied by type of service, as shown in Table E. Inpatient hospital was the most expensive service (32% to 49% of the total) for children, adults and the disabled without Medicare. Children and adults had the lowest percentage prescription drug costs but the highest percentage of physician costs. For the aged and disabled with Medicare, prescription drugs was the most expensive service, accounting for 29% to 55% of total acute costs. The aged and disabled with Medicare had the lowest physician costs. Alabama had the lowest percentage of outpatient hospital costs but higher physician costs than the other states.

Table E
Base year costs, by type of service, state, and eligibility status: Cash eligibles, FY 1990

State and eligibility status	Inpatient hospital	Physician	Outpatient hospital	Drugs	Other	Total Acute
Alabama			*Dollar amounts*			
Children	$208	$106	$34	$25	$56	$428
Adults	$401	$317	$72	$86	$373	$1,250
Aged	$232	$56	$3	$382	$26	$699
Disabled with Medicare	$296	$68	$10	$382	$71	$827
Disabled without Medicare	$1,029	$427	$133	$348	$228	$2,165
Kentucky						
Children	$262	$129	$101	$39	$140	$671
Adults	$572	$299	$252	$116	$239	$1,478
Maine						
Children	$265	$98	$150	$46	$171	$731
Adults	$629	$208	$303	$126	$245	$1,510
Aged	$406	$25	$10	$554	$283	$1,278
Disabled with Medicare	$633	$42	$35	$604	$747	$2,061
Disabled without Medicare	$1,954	$275	$493	$596	$1,394	$4,712
Wisconsin						
Aged	$235	$63	$100	$532	$307	$1,238
Disabled with Medicare	$275	$72	$213	$637	$633	$1,830
Disabled without Medicare	$1,669	$235	$493	$635	$1,146	$4,178
			Cost as a percent of total acute			
Alabama						
Children	48.6%	24.8%	7.9%	5.8%	13.1%	
Adults	32.1%	25.4%	5.8%	6.9%	29.8%	
Aged	33.2%	8.0%	0.4%	54.6%	3.7%	
Disabled with Medicare	35.8%	8.2%	1.2%	46.2%	8.6%	
Disabled without Medicare	47.5%	19.7%	6.1%	16.1%	10.5%	
Kentucky						
Children	39.0%	19.2%	15.1%	5.8%	20.9%	
Adults	38.7%	20.2%	17.1%	7.8%	16.2%	
Maine						
Children	36.3%	13.4%	20.5%	6.3%	23.4%	
Adults	41.7%	13.8%	20.1%	8.3%	16.2%	
Aged	31.8%	2.0%	0.8%	43.3%	22.1%	
Disabled with Medicare	30.7%	2.0%	1.7%	29.3%	36.2%	
Disabled without Medicare	41.5%	5.8%	10.5%	12.6%	29.6%	
Wisconsin						
Aged	19.0%	5.1%	8.1%	43.0%	24.8%	
Disabled with Medicare	15.0%	3.9%	11.6%	34.8%	34.6%	
Disabled without Medicare	39.9%	5.6%	11.8%	15.2%	27.4%	

Demographic factors for cash eligibles by type of service are shown in Tables 3-6. Costs varied tremendously by eligibility category, Medicaid user type, age and sex. Among AFDC children, those under one year of age had the highest costs, followed by females 15 to 20 years of age. AFDC males younger than 14 years of age were generally more expensive than females. The youngest AFDC female adults (under 21 years of age) were more expensive than older females. Costs for the youngest disabled (under 21 years of age) and oldest disabled (more than 45 years of age) had the highest costs. Details explaining the calculation of the demographic factors are given in Appendix C.

The oldest group of aged (85 years of age and over) tended to have lower acute Medicaid costs than other aged. In contrast, Medicare costs increase with age (Waldo et al 1989). There could be several explanations for the relatively low Medicaid costs of the oldest age group. Studies have shown that the Medicare costs in the last years of life decrease with age (Lubitz et al 1995, Lubitz and Riley 1993). It was speculated that aggressive (more expensive) medical interventions are less likely to be given to very old and frail patients.

In addition, a lower percentage of the youngest age group are Medicaid beneficiaries. In FY 1992, 10% of the age group 65-74, 14% of the age group 75-84, and 29% of the age group 85 and over were Medicaid eligibles in the U.S. (From Census data and FY 1992 HCFA-2082 data. Data on the numbers of Medicaid eligibles was not available for earlier years). We speculate that the youngest group of aged eligibles (who are generally not eligible for Medicaid) are more likely to be on Medicaid because of health problems so their costs are relatively high compared to those of their age group not on Medicaid. Thus, we may be comparing a highly selected subset of the age group aged 65-69 and 74-84 to a subset of the age group 85 and over whose costs are closer to the mean of their age group.

D. Geographic Factors

It is known that the cost and utilization of medical care often vary among regions of a state. In addition to the demographic factors developed above, factors are needed to capture geographic variation. Even if there is no variation in payment rates for some services (e.g., physicians) for a Medicaid population as a result of statewide fee schedules, there may be utilization differences by region.

If there were sufficient data, geographic variation could be

accomplished by simply adding geographic regions to the demographic categories discussed above. However, it is unlikely that there would be adequate numbers of eligibles in each of the regions and demographic categories for each MAS/BOE grouping unless the state is relatively large.

Given this situation, the preferred method to determine geographic relativities is the *indirect method of adjustment*. This method captures the price and utilization differences within a geographic region while adjusting for differences in the demographic distribution of the area. Costs per eligible for each type of service by age and sex are calculated for each geographic region. These costs are compared to the "expected" costs per eligible (calculated from the state costs per eligible and the age/sex distribution of the specific geographic area). The ratios of the actual costs in the region to the "expected" costs become the geographic factors. Tables 7, 8, and 9 show the geographic factors for cash recipients in each state.

Alabama is divided into the Birmingham SMA, other urban, and rural counties. Appendix A lists the counties in each region. Of the cash eligibles, 27% resided in Birmingham, 31% in other urban counties, and 42% in rural counties. There was not much geographic variation for any of the cash recipient categories (even by type of service) except for the disabled with Medicare. For the cash disabled with Medicare, Birmingham was 4.5% less expensive, other urban was 2.4% less expensive and rural counties were 4.2% more expensive than statewide averages.

The geographic regions in Kentucky were Louisville SMA, other urban and rural regions. Kentucky was the most rural of the four study states with 61% of cash eligibles residing in rural counties, 25% in Louisville and 14% in other urban. For the cash AFDC children, Louisville was the most expensive (7.9% more expensive that statewide averages), followed by other urban (1.0% more expensive) and rural (2.7% less expensive). Costs were more uniform for cash AFDC adults (geographic factors of 1.004 for Louisville, 0.988 for other urban and 1.001 for rural). There was also variation by type of service, especially for inpatient hospital. In particular, for inpatient hospital services, AFDC children receiving cash were 16% more expensive than statewide averages.

Maine was the smallest of the four study states and was divided only into urban and rural regions. About 48% of cash eligibles resided in urban counties. The geographic factors for urban counties was higher than for rural counties for all of the cash recipients, ranging from 0.976 to 1.025.

The geographic regions in Wisconsin were Milwaukee SMA with 39%,

other urban with 26%, and rural counties with 35% of eligibles. There was little variation in costs for cash aged and disabled. The geographic factors ranged from 0.989 to 1.012 for total costs with little variation by type of service.

E. Exclusions from Base Year Costs and UPLs

Medicaid usually reimburses for medical expenses of beneficiaries for up to three months prior to their eligibility certification if they were eligible in the retroactive period. The FFS expenditures for these individuals and their enrollee months should be deleted from the data used in determining the UPL. This is because the managed care plan would not be responsible for the costs of enrollees before they enrolled in the plan. States may have pre-enrollment FFS windows or may provide services for pre-existing conditions on an FFS basis even after enrollment in a plan. (Most of the statewide 1115 waivers granted in the past two years have eliminated retroactive eligibility.)

In such cases, these FFS costs are generally higher and should be excluded in calculating the UPL. However, the MSIS Personal Summary Records do not contain information on retroactive eligibles and their costs. If the state does not require the managed care plan to be responsible for such costs, the state should estimate these costs separately (from the entire state MSIS Eligible and Claims files or perhaps a sample) and delete these costs from the base year costs used to calculate the UPL.

Generally, managed care plans would not enroll Medicaid beneficiaries who are in the hospital at the time of enrollment. If this is the case, then base costs should also exclude these beneficiaries. The MSIS Personal Summary Records, however, do not include the date of hospitalizations. We did review the costs of all new eligibles (those not enrolled in the first month of FY 1990) with hospital expenses for the aged and disabled receiving cash assistance. Our review was limited to the aged and disabled receiving cash assistance, because most newborns and many AFDC females would have been hospitalized.

Tables 10 and 11 compare the average costs for new eligibles with hospitalizations to average costs for all eligibles. Average costs for these new eligibles were 38% to 648% higher than for all other eligibles. The average costs for all eligibles would decrease by 0.4% to 11% without the new eligibles. Not all new eligibles hospitalized are hospitalized at the beginning of their enrollment so these tables give the maximum impact that new eligibles could bring. However, these tables show that these new eligibles can be very expensive and should be studied further.

F. Adjustment Factors

1. HCFA-64 adjustments

The MSIS database from which base year costs were calculated does not include adjustments such as lump-sum payments to providers, third party liability, probate and other collections, Medicare copayments, etc, that are not are included on the MSIS claims but are included on the HCFA-64 report on actual Medicaid expenditures. Further explanation of these adjustments is given in Appendix B. The HCFA-64 adjustments by service to MSIS data are shown in Tables 12-15. (If the managed care plans are responsible for collecting payments from insurance companies, workers' compensation, etc., the HCFA-64 adjustment for third party liability would not be necessary.)

The adjustments for Alabama ranged from -8.1% for physician services and 2.8% for prescription drugs. The adjustments for Kentucky were between -2.6% and 1.6% except for physician services (15.6%). Kentucky included case management fees and x-ray and laboratory services on the HCFA-64 but not on the MSIS claims. Maine MSIS claims include the hospital charges rather than Medicaid reimbursements, so the adjustments for inpatient hospital (-16.5%) and outpatient hospital (-18.7%) were large. Wisconsin had large adjustments for "other" services (26.6%) because the HCFA-64 included payments that could not be disaggregated by type of service.

2. Administrative expenses

The UPL is the cost to the state Medicaid agency of providing the same services on a FFS basis. Because administrative expenses are part of the FFS costs, it can argued that administrative expenses should be included in the UPL. But the state will continue to have expenses in connection with managed care plans. Thus, an argument can also be made to include only those administrative costs that will be discontinued when managed care is implemented. Another argument could be made for including only the projected decrease in aggregate state administrative expenses (discontinued administrative costs minus any added costs for the managed care plans) in the UPL.

When determining the UPL, some states which have implemented managed care have included an allowance for administrative expenses (Ann Arbor Actuaries 1991 survey of eighteen states). Some of these states, however, only included administrative expenses that were discontinued for

managed care enrollees such as claims processing and utilization review. Other states included total administrative expenses. The state allowances for administrative expenses ranged from 2% to 6% in the survey cited above. Wisconsin does not include administrative expenses in the UPLs because the Medicaid agency's HMO program expenses are estimated to be larger than savings in administration. Currently, the average administrative expenses of all state and local Medicaid programs are less than 4% of total claims.

Table 16 shows the HCFA-64 administrative expenses for FY 1990 in the four states. The largest administrative expenses were for Medicaid Management Information System (MMIS) and finance functions. The HCFA-64 does not include information to separate administrative costs for enrollment and maintaining eligibility records from those for claims processing. States using these costs to calculate administrative expenses would have to estimate these costs separately.

The total administrative expenses in the four study states were relatively low. Administrative expenses as a percentage of total HCFA-64 medical expenditures were 3.4% in Alabama, 3.3% in Kentucky, and 4.6% in Maine. (As discussed above, Wisconsin has chosen not include administrative expenses.) These percentages are the highest amounts that could be included. It is up to the states to determine how much of the administrative expenses should be included in the UPL.

3. Interest Offset

Some, but not all, states included a factor for investment income in their capitation rates (Ann Arbor 1991). HMOs and other managed care plans are generally paid at the beginning of the month. Under FFS, providers are paid after the Medicaid service has been provided and the claim has been processed, which may take weeks. Compared to FFS reimbursement, capitation amounts are received earlier and can be invested. If capitation is paid 30 days, on average, earlier than FFS, the UPL and capitation rates can be reduced by the interest earned for 30 days (at a commonly used interest rate such as 90-day Treasury bill).

4. Reinsurance

Even from the aggregated data by age and sex shown in the Tables 1 and 2, we see that the costs for some individuals were extremely high. Reinsurance can be used to limit the risk to plans of enrolling disproportionately more high cost cases. A common form of reinsurance is an individual stop loss in which health costs exceeding some threshold (e.g.,

$20,000 or $50,000) per person are paid by the state or insurance company. Aggregate stop loss coverage would cover expenditures when the claims exceed an aggregate threshold (e.g., 120% of last year's total). Expenditures subject to the threshold may include expenditures for all claims or specific services such as inpatient hospital.

Under risk sharing arrangements, the plan and the state share the costs above the threshold. For example, under an individual stop loss arrangement, the plan may pay 20% beyond the $50,000 threshold and the state would pay the remaining 80%. Risk sharing gives the plans some continued incentive to control costs.

The state may offer reinsurance to plans. If the plan chooses to purchase reinsurance from the state, the capitation rate would be reduced by the amount of the reinsurance. Reinsurance rates can be calculated from the MSIS Personal Summary Record files. For each enrollee that exceeds the dollar threshold for the covered services, information on demographic characteristics, dollars spent over the threshold, the total dollars spent, and the enrollment period can be used to calculate the reinsurance rates by eligibility category and age/sex cells. Plans may also purchase reinsurance from insurance companies (which would not affect the state's capitation rate). In this report we do not calculate reinsurance costs at specific thresholds for different eligibility categories.

5. Projections

In order to use the historical claims data, projection factors would always be needed to estimate the change in health care costs from the data year to the contract year for the managed care plan. The MSIS claims were for services performed in FY 1990. We are investigating the general feasibility of setting UPLs for the third year following the year of available data, i.e., for FY 1993 from FY 1990 data. Projection factors are thus needed to calculate UPLs and capitation rates for FY 1993.

The HCFA-2082 expenditures are generated from MSIS databases and can be used to calculate FY 1990-93 increases in expenditures by eligibility category and type of service. If the HCFA-2082 reports for FY 1993 had not been available, data for this year could be estimated using FY 1992-93 utilization, price, and eligible factors from the HCFA-37 budgets and FY 1990-92 increases in the HCFA-2082 expenditures. States are required to submit projection factors for the increases from the current fiscal year to the next two fiscal years on a quarterly basis.

State HCFA-37 submissions vary in completeness and reliability. Alternative methods may be more appropriate. Some states use regression models using prior costs per enrollee to estimate trend factors. California uses such a model based on the last twelve quarters of data for a given eligibility category and type of service. An averaging technique smooths the data and then regression is used to estimate the cost per enrollee. The trend factor for a county in New York was estimated by regressing the logarithm of average monthly claims on month of service (Leibowitz and Buchanan 1990).

Tables 12-15 show the FY 1990-93 increases in costs per person year for cash eligibles, combining the FY 1990 HCFA-64 adjustment factors and the FY 1990-93 projection factors. The increases varied by eligibility category and type of service. In Alabama, the FY 1990-93 total increases ranged from 35% to 60% with lowest projection factors for AFDC eligibles. The increases in Kentucky were 42% for AFDC children and 51% for adults. In Maine, the increases ranged from 14% for AFDC adults to 53% for the aged. As in the other two states, the highest increase factor (42%) was for the aged in Wisconsin.

A small number (four) of the state projection factors by type of service and eligibility category showed decreases in costs per eligible from FY 1990 and FY 1993. The largest FY 1990-93 decrease was for "other" costs per eligible of 19% for the aged in Alabama. This was accompanied by a 12% decrease in eligibles so the Medicaid beneficiaries leaving the program may have had relatively high costs for "other" services. We do not have additional information about the FY 1993 data that would help explain any of the other (relatively small) decreases in costs per eligible.

Anticipated changes in provider reimbursement, covered services, and eligibility affect costs per enrollee but would not be reflected in MSIS or HCFA-2082 claims. For instance, if physician fees were to be increased by $10 or bone marrow transplants were newly covered, an estimate of the costs per enrollee under the changes would be necessary to update the UPL. Any major changes in provider reimbursement or covered services already passed by the state legislature or expected to pass should be incorporated in the projection factors. Estimates made for legislative changes from the HCFA-37 budget reports can be used for this purpose.

6. Example of UPL Calculation

Table F shows an example of the calculation of the FY 1993 UPL for Kentucky AFDC cash children (females 6-20) in the Louisville MSA. The FY 1990 base year costs for AFDC cash children of $671 was calculated from MSIS by type of service. The base year costs are multiplied by the demographic factors, geographic factors, and HCFA-64 adjustments to produce base year costs for the specific category. Then administrative expenses, investment income offset, and reinsurance can be incorporated depending on the state. Projection factors by type of service were used to calculate the UPL of $684 for FY 1993.

Table F

Sample Calculation of UPL

State: Kentucky
Base Year: FY 1990
Capitation Year: FY 1993
MAS/BOE Group: AFDC Children Cash Eligibles
Age/Sex Group: 6-14 Females
Geographic Area: Louisville

	Data Source	Inpatient Hospital	Outpatient Hospital	Physicia	Drugs	Other Services	Total Acute
1. Base year FFS Cost for AFDC cash children	Table E	262	$101	$129	$39	$140	$671
2. Demographic Factors	Table 4	0.327	0.686	0.753	0.830	0.982	
3. Geographic Factors	Table 8	1.160	1.057	1.030	1.036	0.999	
4. HCFA-64 Adjustments	Table 13	0.999	1.156	1.016	0.979	0.974	
5. FFS Cost for Females 6-14 in Louisville	Calculated	$99	$85	$102	$33	$134	$453
6. Administrative Expenses*	Table 16	1.033	1.033	1.033	1.033	1.033	
7. Investment Income Offset*		0.995	0.995	0.995	0.995	0.995	
8. Reinsurance* ($25,000 per person)		0.996	0.998	0.998	0.998	0.998	
9. Projection Factors	Table 13	1.011	1.604	1.643	1.872	1.507	
10. Upper Payment Limit FY 1993	Calculated	$102	$140	$172	$63	$207	$684

* Optional

SECTION III - SETTING CAPITATION RATES

Once upper payment limits have been calculated from FFS costs, capitation rates can be set. Capitation rates can be based on a percentage of the UPL, determined through negotiation or competitive bidding, or based on the actual or expected costs of the plans.

A. Capitation rates based on UPL

By Federal regulation, states cannot set capitation rates which exceed the UPL, which implies that the plans can deliver Medicaid services at or lower than the cost of the FFS program. The lower the percentage of UPL, the more savings compared to FFS costs is expected. The percentage of UPL chosen as the capitation rate depends on the circumstances. If Medicaid managed care is new in the area or if the state wants to encourage new plans, there may be more uncertainty about the accuracy and adequacy of the UPL. The capitation rate can be set high, at 98% to 100% to encourage plans to participate. The percentage can be set lower if there are enough plans operating in an area. Although there are valid quality assurance reasons for managed care plans (e.g., integrating services and improving access), the primary incentive motivating states to contract with capitated prepaid plans has been to reduce overall Medicaid expenditures. This generates strong pressures to reduce the percentage of UPL in order to show significant savings.

Once there is financial experience available from the plans, the actual costs should be compared to the capitation rates. If most plans experience significant sustained losses, the capitation rates may have to be increased. Otherwise, most plans will eventually drop out, leaving the state with too few plans for competition, or the surviving plans will be forced to reduce the quality of care.

In 1990 most states were paying capitation rates that were between 90% and 100% of the UPL (Ann Arbor 1991). Some of the states used a percentage of UPL as the maximum level of payment, with the actual capitation rates set through negotiation. Several states varied the capitation rate by geographic region and eligibility category.

B. Capitation rates set through negotiation or competitive bidding

Instead of the state setting the capitation rates, negotiation or competitive bidding can be used. The plan is usually in the best position to estimate its own costs, especially if it has experience with Medicaid. States may negotiate directly with the plans on the capitation rates. The bargaining power of the state depends on how many plans are willing to participate and the competitiveness of the area's health care market.

Competitive bidding is a more formal process of eliciting capitation rates that would be accepted by plans. By publicly requesting proposals, the state may encourage more plans to participate. HMOs or other organizations from other states may want to compete for contracts. New plans sponsored by hospitals, physician groups, etc., may be organized.

Competitive bidding requires administrative resources. It takes time to develop a competitive bidding process, produce and disseminate requests for proposals, answer questions from bidders, evaluate proposals, and determine the final contract winners. Some minimum requirements for bidders on finances (e.g., reserves) and ability to provide services may be set. The capitation bids may still be too high compared to the state's budget. Additional rounds of bidding (e.g., best and final) or negotiation with the top bidders may be required.

C. Capitation rates based on actual costs of the plan

There are problems with paying managed care plans capitation rates that are either significantly higher or lower than their actual costs. Capitation rates based on the actual costs of the plan (also known as experience-based rates) are designed to minimize over and underpayment. Some reimbursement methods under FFS are also based on costs but are not prospective; these are not capitation rates and not addressed in this report. There are five major types of capitation rates based on the actual costs of the plans: prospective experience rating, blended rates, adjusted community rates, actuarial matrices, and budgets.

1. Prospective Experience Rating

The actual historical per capita costs of the plan can be calculated using financial information or pricing and encounter data submitted by the plan. These costs could then be projected to a future time period using estimated utilization and prices. There are some problems with using historical per capita costs. In a transition period moving toward experience-

based rates, it may be difficult to obtain complete data from the plan. Plans may not collect comprehensive financial and utilization data for separate enrollee groups. In addition, prospective experience rating may not provide the appropriate incentives for managed care plans to deliver services efficiently.

2. Blended rates

States may not want to rely on just the plan's costs to determine capitation rates. Blended rates can be calculated using the costs of the plan and FFS costs. For instance, the capitation rate could be a weighted average using 60% of the plan's per-capita costs and 40% of FFS costs. Blended rates help to avoid major overpayment and underpayment but give the plans some incentive to control costs.

3. Adjusted community rating

Adjusted community rates (ACRs) can be used for HMOs with private enrollees. Under Medicare risk contracts, the HMO's community rate is adjusted for differences in benefits, utilization, and intensity of services between Medicare and non-Medicare enrollees. Similarly, Medicaid ACRs could be calculated. The ratios of costs per Medicaid enrollee to private enrollees would be calculated for a recent year from the HMO's own data. These ratios are assumed to persist in the target year, and the Medicaid capitation is tied directly to the capitation received for private enrollees.

4. Actuarial matrices

Actuarial matrices use utilization rates and prices for services to calculate per-capita costs. Actuarial matrices are widely used by IPA model HMOs for estimating their costs for private enrollees. An example is shown in Table G. Utilization as measured by the number of units of service per 1000 enrollees is multiplied by the cost per unit to estimate yearly costs per 1000 for different services. The total yearly costs per 1000 are then divided by 12 months and 1000 enrollees to calculate monthly capitation rates. The state can review assumptions about utilization and projected costs per unit.

Table G Actuarial Matrix Monthly Capitation Rates AFDC Cash Eligibles

Type of Service	Utilization Units per 1000 Enrollees	Cost per Unit	Monthly Capitation
Inpatient Hospital	468	1092	**$42.59**
Outpatient Hospital			**$9.78**
Surgery	90	588	$4.41
Lab and Radiology	310	140	$3.62
Visits	250	84	$1.75
Physician Services			**$31.28**
Office Visits	3500	39	$11.38
Inpatient Visits	290	56	$1.35
Inpatient Surgery	180	840	$12.60
Outpatient Surgery	120	350	$3.50
Lab and Radiology	700	42	$2.45
Other			**$10.24**
Prescription Drugs	3800	23	$7.41
Dental	300	33	$0.81
Durable Medical Equipment	18	195	$0.29
Home Health	20	46	$0.08
Other Practitioners	120	33	$0.33
Other	680	23	$1.33
Subtotal			**$92.56**
Administrative Expenses (4.2%)			**$3.89**
Total			**$96.45**

5. Budget method

Budgeting can be used for plans with their own facilities and staff or large subcontracts with providers. Some costs such as rent and insurance may be known ahead of time because of multi-year contracts. A plan may subcontract with a large physician group on a capitation basis for each enrollee. Inpatient services are less likely to be contracted on the basis of capitation or other fixed payment but can be handled in the budget with an estimate of the inpatient days and cost per day.

An example of the budget method is shown in Table H.

Table H Budget Approach to Rate setting

	1995 Budget
I. Medical Center Expenses	
A. Medical salary	8,590,000
B. Other salary	5,603,000
C. Rent and maintenance	2,147,500
D. Medical supplies and equipment	859,000
E. Insurance	660,000
F. In house pharmacy	763,000
G. Utilities	441,000
H. Other center expenses	113,000
	19,176,500
II. Other Medical Expenses	
A. Hospital inpatient	14,375,000
B. Hospital O/P emergency	2,395,833
C. Physician referral	4,850,000
D. Pharmacy	1,800,000
	23,420,833
III. Administration	
A. Personnel	3,120,900
B. Data processing	802,500
C. Supplies	168,000
D. Rent and maintenance	690,300
E. Utilities	276,120
F. Other	80,800
	5,219,420
IV. Total expenses	47,816,753
V. Expected enrollment (months) for AFDC cash Eligibles	443,250
VI. Projected capitation rate IV. divided by V.	$107.88

SECTION IV - OTHER ISSUES

This grant specifically addresses the use of MSIS Personal Summary Records in Medicaid capitation rate setting. The Personal Summary Records data do not have the detailed data to study such issues as special population groups, selection bias, eroded FFS base, and access to care. However, we briefly discuss the following issues that also should be considered in rate setting.

A. Special population groups

In addition to stop loss and risk sharing arrangements, special risk pools can be formed for high risk population groups. Some states set separate capitation rates for persons with AIDS or liver and other transplants. One state pays for high-risk deliveries and neonatal intensive care beyond nine days by FFS. States may exempt special-needs children or other disabled persons from enrollment in plans because their services and/or providers would be difficult to accommodate under managed care.

Sometimes a state may choose to set separate UPLs and capitation rates for Medicaid categories of beneficiaries with small numbers of persons. These categories would generally be special populations with unusual medical needs such as special-needs children or ventilator patients. The plan would initially be paid on the basis of the UPL calculated from the FFS data for that category. The capitation rate would later be adjusted using actual cost for that group of Medicaid beneficiaries in the managed care plan. If separate rates are used for such a group, their FFS costs and enrollee months need to be excluded from the FFS database used to calculate UPLs for other beneficiary categories.

B. Selection Bias

Whenever Medicaid beneficiaries have a choice between joining a plan or remaining under FFS or have a choice among plans, there is the possibility of selection bias. Favorable selection may occur if persons with health problems who have ties to specific providers remain under FFS and don't enroll in a plan. Unfavorable selection may occur if the plan contracts with the most prestigious hospitals and specialists, thereby attracting the enrollment of persons with extensive health problems. Evidence of selection bias may be measured by comparing prior Medicaid expenditures or rates of severe diseases (cancer, heart disease, etc.) of the plan's enrollees with the FFS base or costs of other plans. A plan with costs and/or utilization that are persistently higher than FFS or other plans may be experiencing selection

bias.

If a plan enrolls a population with a significantly different case mix than the base FFS population, the capitation rates may not adequately compensate or may overpay the plan. If a state determines that a plan has experienced selection bias, adjustments to the capitation rates may be made. Capitation rates could be compared to the actual costs of the plan. Some percentage or all of the difference between the capitation rates paid and the actual costs of the plans could be paid to the plans retroactively. Future capitation rates could incorporate some form of reinsurance. Some of the high cost cases with specific diagnoses (transplant, etc.) could be paid separately by FFS.

C. Enrollment Classification Issues

If the separate UPLs and capitation rates for the institutionalized and significant home health users are substantially higher than those for non-LTC users, there may be an incentive for managed care plans to steer enrollees into these categories in order to increase their reimbursement. Although the state sets the criteria for institutionalization and home health waivers, the plans may be able to increase the number of applications and enrollees for these programs. The states should monitor the rates of institutionalization and waivered populations in such cases.

D. Eroded FFS Databases

After mandatory enrollment of Medicaid beneficiaries in managed care plans has been in effect for a region of the state or even the entire state, the FFS database is eroded. There is no FFS database to calculate UPLs for those beneficiaries. Other methods must be used. If only part of the state has a mandatory program, data from other regions in the state can be used to calculate trend factors for the area with the eroded FFS database. Previous geographic differences between the two regions can be used to adjust the trend factors. The trend factors would then be used to bring forward the FFS estimates from the time period before the database become inadequate.

If the whole state has a mandatory managed care program for some or all eligibility categories, the UPLs calculated from the FFS database can be trended forward using inflation factors from eligibility categories still under FFS, inflation factors from the plans, or other measures (CPI-medical for the state, etc.) After a few years of using trend factors, alternative methods of calculating UPLs and capitation rates should be considered, including a move

toward prospective experience rates or competitive bidding.

E. Access to Care

The UPL is an estimate of what services would cost under an FFS basis for a group of Medicaid beneficiaries. If there is evidence from analyzing utilization rates that the FFS experience being used to calculate the UPL is based on an under served population, the state may want to consider that in setting the capitation rate. Medicaid utilization rates from other parts of the state or census region, or utilization rates from operating Medicaid managed care plans could be used to assess the problems of access to care. Capitation rates for regions with documented problems of access to care could be set at a higher percentage of UPL. States must apply for Federal waivers to pay capitation rates that exceed the UPL.

F. Other Issues

Other issues to consider in capitation rate setting are extensions of Medicaid eligibility and duration-based capitation rates. Persons who are added onto Medicaid during recessions, or who leave during economic booms, tend to be less expensive than the long-time Medicaid enrollees. Medicaid eligibility is extended for six to twelve months for persons losing cash assistance (e.g., through employment). Some states specify longer extension periods of eligibility for their managed care enrollees. These Medicaid eligibles with extended eligibility tend to cost less than average because those who can obtain employment are healthier and may be covered by employment-based health plans. MSIS Personal Summary Records files do not contain data that would be necessary to analyze the costs based on Medicaid duration or extended eligibility.

SECTION V - CONCLUSIONS

A. Summary of Methodology and Results

Half the states already submit quarterly eligibility and claims data according to specified definitions and formats to HCFA. We have shown that the MSIS Personal Summary Records created from the state data have the comprehensive data needed to calculate upper payment limits and capitation rates for managed care plans. The Personal Summary Records contain data on eligibility (MAS, BOE, age, sex, and county of residence) and claims (amounts paid by type of service). For the four study states, we assessed the reliability of MSIS data. With some adjustments to reflect the HCFA-64 actual expenditures, the MSIS data can accurately represent the costs of the state Medicaid programs.

The MSIS Personal Summary Records were the primary component of the databases used for calculating upper payment limits. Medicaid eligibles were categorized by type of Medicaid user (institutionalized, significant home health user, and those not long-term care users), Medicaid eligibility, age group and sex. Acute services were separated into major categories (inpatient hospital, outpatient hospital, physician, prescription drugs, and other services).

In order to create a database suitable for capitation rate setting, data from the MSIS Personal Summary Records were extracted and organized. Some of the MSIS eligibility categories were re-coded according to the age of the enrollee. Medicare status was imputed for persons without any Medicaid claims. All eligibles were categorized as institutionalized, significant home health users, and non-LTC users on the basis of institutional and home health utilization.

Base year costs were calculated for each type of Medicaid eligible by age, sex, and type of service. The mean costs, standard deviations, and numbers of person years for each age/sex cell varied tremendously. Suggested minimum cell sizes were calculated from a statistical method using a 90% confidence interval. The minimum cell sizes for the study states were at least 1200 person years. Age/sex cells for AFDC children and the disabled were most likely to have inadequate numbers of person years, according to this method. When age/sex cells have an inadequate number of person years, two or more age groups, user types or even eligibility categories with similar costs can be combined. When eligibles with dissimilar costs are combined, the state should consider potential problems with selection bias.

The FY 1990 acute Medicaid costs per eligible year varied by age, sex, eligibility category, and geographic region. AFDC children under the age of one and disabled children had the highest costs. Younger AFDC adults and aged generally had higher costs than their counterparts while the younger disabled had lower costs. AFDC males younger than 14 had lower costs than females while disabled males tended to have lower costs. Costs in geographic region varied by state. In some states, urban areas had higher costs for certain eligibility categories while rural areas had higher costs in other states.

Projection factors were used to estimate FY 1993 upper payment limits from the FY 1990 base year costs. Adjustments to acute costs that may be included are adjustments for geographic variation, administrative expenses, interest offset, and reinsurance.

UPLs calculated from the MSIS FFS data are an essential part of the capitation rate setting but are not necessarily directly translated into capitation rates. Capitation rates can be based on a percentage of the UPLs, determined through negotiation or competitive bidding, or based on the costs of the plans but cannot exceed the UPL.

Comparing Medicaid costs per eligible across states requires caution. State Medicaid programs vary tremendously in eligibility requirements and reimbursement for services. AFDC and SSI cash recipients are Federally-mandated categorically needy Medicaid beneficiaries. However, the income and asset limits are set by the states. The eligibility rules for the categorically needy not receiving cash assistance (also known as non-cash eligibles) and medically needy also vary by state. Medicaid beneficiaries considered non-cash eligibles in one state may be considered medically needy in another state. The spend-down requirements and income limits for the medically needy are state-specific. Therefore, the types of individuals in each eligibility category and their health needs may differ substantially by state.

State reimbursement for inpatient and outpatient hospital services, physician and other professional visits and procedures, home health visits, medical equipment, etc., are based on state Medicaid-recognized costs and fee schedules. There are also optional services within the other professional and "other" service categories such as chiropractors, nurse midwives, and hearing aids. The Medicaid costs per eligible will vary depending on how the state sets eligibility and reimbursement rates.

B. Recommendations for HCFA

The MSIS Personal Summary Records did not indicate whether or not a Medicaid beneficiary was also eligible for Medicare, only if Medicare paid for any of the Medicaid services. Since there are a significant number of aged and disabled beneficiaries without services paid by Medicaid or Medicare, we had to estimate how many of those without services were Medicare beneficiaries to add to those with Medicare dollars. The estimated percentages of Medicare eligibles in Alabama and Wisconsin were similar to Social Security data but the estimated Medicare percentage in Maine is low compared to Social Security data (See Appendix A for more details.) Since the costs for the disabled with Medicare are significantly lower than for the disabled without Medicare, we recommend that MSIS include a Medicare indicator, which is available on the MSIS Eligibility files.

Other useful data elements for MSIS Personal Summary Records and Eligibility Files would be the date Medicaid eligibility was approved, effective date of Medicaid eligibility, and whether Medicaid eligibility has been extended because of enrollment in a managed care or loss of cash assistance. This would allow studies of the costs of retroactive eligibility, initial hospitalizations, and extended eligibility.

States included different types of eligibles and services depending on whether the report was just for the state, for the HCFA-2082 or the HCFA-64. We recommend that HCFA maintain and update crosswalks from the states so that eligibility categories and type of service can be compared between the HCFA-2082 and the HCFA-64 reports.

C. Recommendations for States

This report describes a methodology that states can generally follow to calculate UPLs and capitation rates from MSIS data. A separate manual which explains the procedures step by step was also produced for this grant. For this report data from four states was used to illustrate the procedures and types of problems that may be encountered in rate setting. However, at many stages of rate setting, there are many ways for states to proceed. For instance, there are no set rules for determining rate categories. States should study variations in costs by demographic factors and the number of eligible years in determining rate classifications and whether cells should be combined. There are many methods that a state can use to estimate projection factors. Capitation rates can be set based on the UPL, determined through negotiation or competitive bidding, or based on the actual costs of the plans. The rate setting procedures chosen by the state

would depend on the types of Medicaid eligibles enrolled in managed care plans, how extensive Medicaid managed care is statewide, what types of data are available in a timely fashion, regional differences within the state, financial experience of plans, and state budgets.

An important recommendation to states is to conduct retrospective checks of the UPLs and capitation rates. Capitation rates are set prospectively. However, the projected UPL FFS costs and capitation rates should be compared to actual costs per eligible by the state routinely. This review may point out problems in the projection factors or adjustments for program changes.

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GLOSSARY

Base Year: The year for which data is available. In this study, the base year is fiscal year 1990.

Base Year Costs: Annual expenditures in the base year for the services to be included in the capitation payment.

Basis of Eligibility (BOE): A classification of Medicaid eligibles :

(1) aged
(2) blind
(3) disabled
(4) children
(5) caretaker relatives and pregnant women
(6) other Title XIX eligibles.

Capitation rates: Predetermined payments that are paid on a monthly basis per enrollee regardless of the services provided to the enrollee.

Dually Eligible: A person who is eligible for Medicaid may also be eligible for Medicare.

Fee-for-service: Reimbursing for specific services provided to Medicaid recipients, usually based on Medicaid-approved costs or a fee schedule.

HCFA-2082 report: The annual statistical state report summarizing MSIS claims by type of maintenance assistance status, basis of eligibility, and type of service for the fiscal year, and selected utilization measures.

HCFA-64 report: The quarterly state report summarizing Medicaid expenditures by type of service, including current quarter expenditures and expenditures for prior quarters.

Institutionalized person: An enrollee is considered institutionalized if either expenditures or utilization for institutional care (mental hospital, skilled nursing facility, or intermediate care facility) exceed a minimum level (e.g., 100 days in this report).

Medical Assistance Status (MAS): A classification of Medicaid eligibles

(1) categorically needy, receiving Federal cash assistance, who are also known as cash eligibles

(2) categorically needy, not receiving Federal cash assistance, who are also known as non-cash eligibles
(3) medically needy
(4) other coverage groups created by legislation effective prior to 1988
(5) coverage groups created by the Medicare Catastrophic Coverage Act of 1988 and later legislation.

Medicaid Statistical Information System (MSIS): MSIS is the computer system used to collect the Medicaid expense and utilization information by the state and submitted to HCFA.

Personal Summary Records: Computer files that summarize the MSIS claims (by type of service) and eligibility data for each Medicaid eligible for the fiscal year.

Significant Home Health User: An enrollee is considered a significant home health users if either expenditures or utilization for home health services exceed a minimum level (e.g., 50 visits in this report).

Upper Payment Limit (UPL): The comparison cost of fee-for-service payments to provide specified medical services to a specific group of enrollees. Capitation payments to the prepaid plan cannot exceed the UPL.

Figure 1

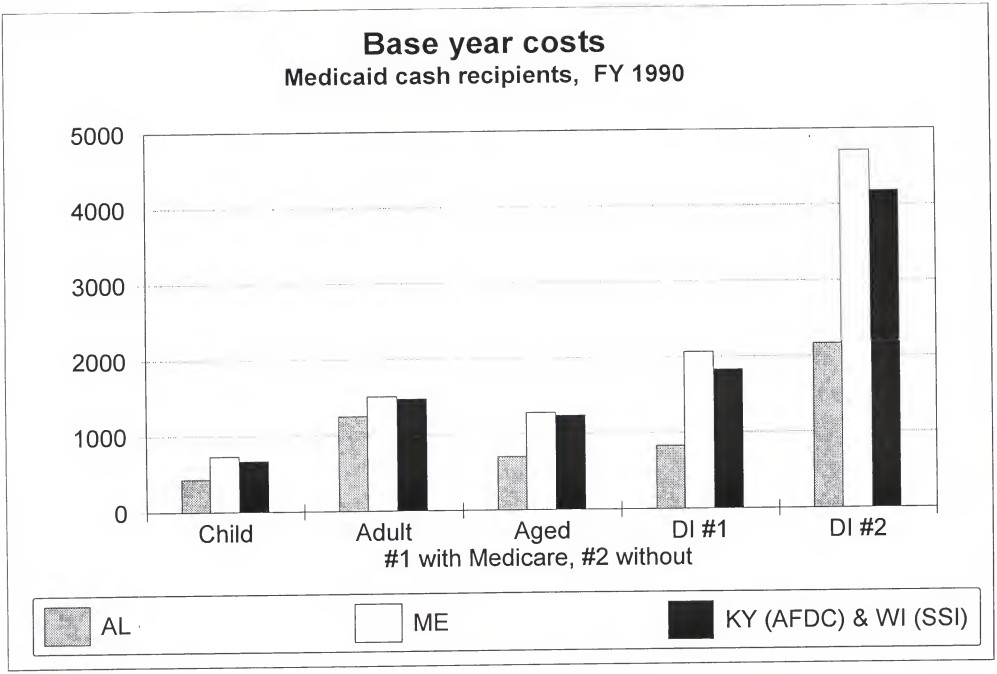
Base year costs
Medicaid cash recipients, FY 1990
5000
4000
3000
2000
1000
0
Child
Adult
Aged
DI #1
DI #2
#1 with Medicare, #2 without
AL
ME
KY (AFDC) & WI (SSI)

Figure 2

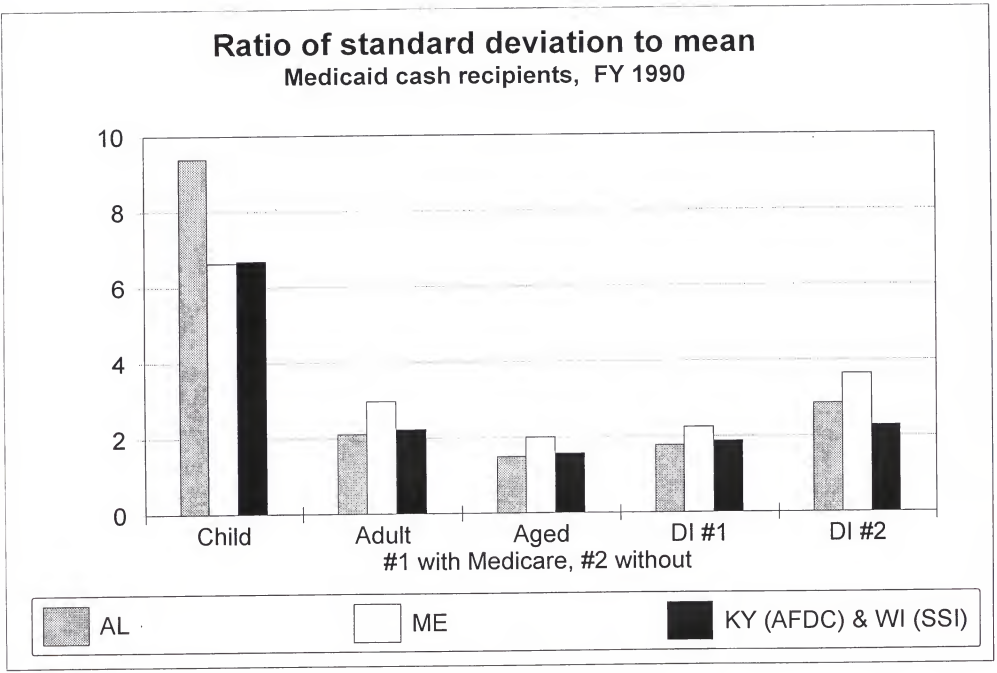
Ratio of standard deviation to mean
Medicaid cash recipients, FY 1990
10
8
6
4
2
0
Child
Adult
Aged
DI #1
DI #2
#1 with Medicare, #2 without
AL
ME
KY (AFDC) & WI (SSI)

Table 1

Average acute cost, person years, and standard deviation, by type of Medicaid user and state: Cash eligibles, FY 1990

Type of user and state	*Institutionalized* Average acute cost	Person years	Standard deviation	*Significant home health user* Average acute cost	Person years	Standard deviation	*Non-long term care users* Average acute cost	Person years	Standard deviation	*All types of Medicaid users* Average acute cost	Person years	Standard deviation
Children												
Alabama	$2,041	19	$1,820	$747	5	$982	$428	91,675	$4,028	$429	91,698	$4,027
Kentucky	$6,563	267	$23,399	$13,949	387	$35,379	$616	122,865	$3,807	$671	123,519	$4,487
Maine	$9,606	54	$6,469	$17,242	23	$46,788	$707	35,405	$4,670	$731	35,482	$4,844
Adults												
Alabama		0		$7,166	14	$5,421	$1,247	37,353	$2,613	$1,249	37,367	$2,617
Kentucky	$23,007	3	$18,278	$12,761	178	$18,309	$1,444	61,357	$3,082	$1,478	61,539	$3,294
Maine		0		$14,354	3	$19,369	$1,508	22,540	$4,472	$1,510	22,544	$4,479
Aged												
Alabama	$1,287	1,534	$1,952	$980	4,125	$1,086	$652	44,248	$971	$699	49,906	$1,034
Maine	$2,526	19	$2,015	$2,398	331	$5,073	$1,216	6,452	$2,348	$1,278	6,802	$2,561
Wisconsin	$2,338	1,309	$2,521	$2,441	1,851	$2,851	$1,047	19,251	$1,720	$1,238	22,411	$1,951
Disabled with Medicare												
Alabama	$1,737	712	$2,375	$1,241	2,392	$1,932	$779	34,492	$1,388	$827	37,596	$1,463
Maine	$3,671	3	$4,167	$3,574	201	$8,007	$2,007	5,758	$4,442	$2,061	5,962	$4,614
Wisconsin	$2,881	1,257	$3,661	$4,082	1,643	$4,955	$1,626	24,673	$3,240	$1,830	27,573	$3,443
Disabled without Medicare												
Alabama	$1,833	1,217	$3,961	$2,732	2,287	$5,400	$2,143	41,393	$5,855	$2,165	44,896	$6,183
Maine	$10,914	44	$16,565	$5,951	587	$13,496	$4,613	10,100	$17,318	$4,711	10,730	$17,135
Wisconsin	$4,907	2,089	$9,924	$11,960	1,498	$19,010	$3,764	31,868	$8,603	$4,178	35,455	$9,504

Table 2

Average acute cost, person years, and standard deviation, by type of Medicaid user and state: Non-cash eligibles, FY 1990

Type of user and state	*Institutionalized* Average acute cost	Person years	Standard deviation	*Significant home health user* Average acute cost	Person years	Standard deviation	*Non-long term care users* Average acute cost	Person years	Standard deviation	*All types of Medicaid users* Average acute cost	Person years	Standard deviation
Children												
Alabama	$1,155	3	$799	$7,203	1	$3,888	$480	11,937	$3,211	$480	11,941	$3,211
Kentucky	$6,377	3	$9,081	$6,651	3	$9,377	$437	2,041	$1,531	$455	2,047	$1,618
Maine	$12,311	36	$9,104	$9,465	5	$15,856	$803	6,766	$7,532	$870	6,806	$7,596
Adults												
Alabama		0		$7,304	1	$2,731	$2,085	5,687	$5,170	$2,086	5,688	$5,170
Kentucky		0		$2,922	3	$2,257	$843	1,372	$2,158	$847	1,374	$2,160
Maine		0		$100,762	3	$314,778	$1,589	3,908	$4,885	$1,676	3,911	$9,678
Aged												
Alabama	$820	10,883	$887	$1,014	56	$814	$593	1,304	$1,007	$797	12,242	$903
Maine	$1,469	6,560	$2,325	$1,783	260	$2,109	$2,099	1,914	$5,583	$1,617	8,734	$3,330
Wisconsin	$2,093	23,428	$2,286	$2,423	434	$2,344	$1,406	3,647	$4,172	$2,007	27,508	$2,627
Disabled with Medicare												
Alabama	$736	1,324	$874	$944	20	$1,057	$945	325	$1,810	$780	1,669	$1,123
Maine	$2,851	314	$4,893	$2,561	72	$8,055	$2,420	448	$7,166	$2,594	833	$6,490
Wisconsin	$2,620	4,475	$2,903	$3,925	188	$4,358	$2,389	1,156	$7,444	$2,616	5,819	$4,261
Disabled without Medicare												
Alabama	$741	696	$2,001	$2,043	18	$4,850	$3,436	209	$10,416	$1,376	923	$5,575
Maine	$3,280	915	$9,058	$12,179	105	$27,076	$7,776	1,825	$22,046	$6,492	2,845	$19,246
Wisconsin	$4,066	989	$10,634	$7,607	83	$11,905	$6,727	535	$21,237	$5,135	1,607	$15,969

Table 3

Demographic factors, by selected characteristics:
Cash recipients in Alabama, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
AFDC children	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	2.156	7.066	3.535	4.606	10.900
II. Significant home health users	2.155	1.453	2.012	1.418	0.746
III. Non-long term care users					
Female: <1	5.743	2.547	1.846	1.805	2.292
Female: 1-5	0.405	0.770	0.924	1.024	0.639
Female: 6-14	0.262	0.694	0.677	0.749	0.776
Female: 15-20	0.851	1.482	1.163	1.207	4.231
Female: All Ages	0.864	0.967	0.916	0.988	1.216
Male: <1	7.770	3.338	2.422	2.068	2.347
Male: 1-5	0.579	0.960	1.233	1.179	0.653
Male: 6-14	0.323	0.682	0.756	0.757	0.635
Male: 15-20	0.569	0.705	0.794	0.618	0.487
Male: All Ages	1.131	1.029	1.081	1.012	0.785
Total: <1	6.787	2.955	2.142	1.940	2.320
Total: 1-5	0.494	0.866	1.078	1.104	0.646
Total: 6-14	0.292	0.688	0.715	0.753	0.705
Total: 15-20	0.706	1.081	0.971	0.904	2.295
Total: All Ages	1.000	0.998	1.000	1.000	0.998
AFDC adults	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	0.000	0.000	0.000	0.000	0.000
II. Significant home health users	6.831	4.426	4.202	11.292	4.684
III. Non-long term care users					
Female: <21	1.265	1.301	0.975	0.506	2.157
Female: 21-44	0.905	0.921	0.983	0.934	0.829
Female: 45+	0.919	0.937	1.070	2.849	0.206
Female: All Ages	0.965	0.984	0.986	0.966	1.015
Male: <21	7.150	2.772	1.601	0.903	0.961
Male: 21-44	2.401	1.589	1.583	1.958	0.217
Male: 45+	1.677	1.661	1.501	3.999	0.167
Male: All Ages	2.486	1.671	1.565	2.391	0.245
Total: <21	1.307	1.312	0.979	0.508	2.148
Total: 21-44	0.934	0.933	0.996	0.953	0.818
Total: 45+	0.987	1.001	1.108	2.951	0.202
Total: All Ages	0.998	0.999	0.999	0.997	0.999

Table 3

Demographic factors, by selected characteristics:
Cash recipients in Alabama, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Aged	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	3.019	1.273	0.967	1.284	0.856
II. Significant home health users	1.593	1.138	0.967	1.364	0.868
III. Non-long term care users					
Female: 65-74	0.599	0.918	1.133	0.994	0.953
Female: 75-84	0.953	0.965	1.000	1.072	0.977
Female: 85+	0.978	0.945	0.933	0.880	1.327
Female: All Ages	0.836	0.945	1.033	1.007	1.039
Male: 65-74	0.819	0.989	0.800	0.692	0.755
Male: 75-84	1.133	1.131	1.000	0.867	1.008
Male: 85+	0.993	1.119	0.967	0.740	1.016
Male: All Ages	1.007	1.085	0.933	0.786	0.930
Total: 65-74	0.646	0.934	1.067	0.931	0.911
Total: 75-84	0.997	1.005	1.000	1.023	0.984
Total: 85+	0.981	0.986	0.933	0.847	1.253
Total: All Ages	0.875	0.977	1.000	0.956	1.016
Disabled with Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	3.375	1.512	0.928	1.496	0.787
II. Significant home health users	1.713	1.366	1.546	1.509	0.694
III. Non-long term care users					
Female: <20	0.211	0.255	1.464	0.128	0.110
Female: 21-44	0.474	0.742	1.144	0.550	1.705
Female: 45-64	0.798	1.333	1.577	1.311	1.187
Female: 65+	1.359	1.171	0.835	1.409	0.784
Female: All Ages	1.028	1.111	1.093	1.197	1.029
Male: <20	0.049	0.077	0.196	0.092	0.024
Male: 21-44	0.398	0.528	0.711	0.345	1.588
Male: 45-64	0.610	0.889	0.773	0.738	0.854
Male: 65+	1.487	1.108	1.052	0.959	0.699
Male: All Ages	0.719	0.753	0.784	0.603	1.020
Total: <20	0.106	0.140	0.649	0.105	0.055
Total: 21-44	0.429	0.616	0.887	0.429	1.636
Total: 45-64	0.714	1.134	1.216	1.055	1.038
Total: 65+	1.391	1.155	0.887	1.297	0.763
Total: All Ages	0.902	0.965	0.969	0.954	1.025

Table 3

Demographic factors, by selected characteristics:
Cash recipients in Alabama, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Disabled without Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	0.939	0.679	0.511	0.961	0.766
II. Significant home health users	1.370	1.204	1.040	1.296	0.959
III. Non-long term care users					
Female: <6	2.629	1.376	1.034	0.475	0.624
Female: 6-20	0.841	0.630	0.556	0.376	0.766
Female: 21-44	0.847	0.957	1.183	0.844	1.488
Female: 45-64	1.010	1.280	1.274	1.606	0.927
Female: All Ages	0.974	1.086	1.143	1.151	1.092
Male: <6	2.901	1.126	0.910	0.465	0.597
Male: 6-20	0.754	0.655	0.506	0.385	0.468
Male: 21-44	0.774	0.708	0.908	0.694	1.312
Male: 45-64	1.163	1.213	0.950	1.136	0.741
Male: All Ages	0.992	0.866	0.815	0.732	0.884
Total: <6	2.781	1.236	0.965	0.470	0.609
Total: 6-20	0.792	0.644	0.527	0.381	0.596
Total: 21-44	0.816	0.851	1.066	0.780	1.413
Total: 45-64	1.054	1.261	1.182	1.473	0.874
Total: All Ages	0.981	0.998	1.012	0.985	1.009

Table 4

Demographic factors, by selected characteristics:
Cash recipients in Kentucky, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
AFDC children	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	15.710	7.337	2.620	2.317	8.215
II. Significant home health users	43.856	9.636	5.671	4.764	3.371
III. Non-long term care users					
Female: <1	5.254	2.446	1.598	1.640	1.388
Female: 1-5	0.520	0.921	0.940	1.102	0.681
Female: 6-14	0.327	0.686	0.753	0.830	0.982
Female: 15-20	1.023	1.262	1.312	1.091	1.584
Female: All Ages	0.823	0.953	0.937	1.008	0.979
Male: <1	5.949	2.862	2.070	1.815	1.499
Male: 1-5	0.573	1.037	1.186	1.178	0.754
Male: 6-14	0.337	0.696	0.786	0.779	1.048
Male: 15-20	0.482	0.687	0.923	0.632	0.954
Male: All Ages	0.843	0.964	1.026	0.967	0.975
Total: <1	5.609	2.658	1.839	1.728	1.445
Total: 1-5	0.547	0.979	1.064	1.140	0.718
Total: 6-14	0.332	0.691	0.769	0.805	1.016
Total: 15-20	0.736	0.956	1.105	0.848	1.249
Total: All Ages	0.833	0.959	0.982	0.987	0.976
AFDC adults	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	29.546	6.134	3.451	12.052	8.389
II. Significant home health users	14.447	5.549	4.595	5.970	4.140
III. Non-long term care users					
Female: <21	1.554	1.457	1.062	0.490	1.292
Female: 21-44	0.842	0.911	0.950	0.911	0.946
Female: 45+	0.785	0.852	0.996	2.200	0.954
Female: All Ages	0.931	0.978	0.967	0.928	0.991
Male: <21	1.612	1.078	1.167	0.251	1.006
Male: 21-44	1.257	1.056	1.211	1.376	0.944
Male: 45+	1.384	1.218	1.419	2.704	1.102
Male: All Ages	1.289	1.091	1.254	1.643	0.979
Total: <21	1.554	1.453	1.063	0.488	1.290
Total: 21-44	0.874	0.921	0.969	0.946	0.946
Total: 45+	0.932	0.942	1.100	2.324	0.990
Total: All Ages	0.959	0.987	0.989	0.985	0.990

Table 5

Demographic factors, by selected characteristics:
Cash recipients in Maine, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
AFDC children	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	4.028	57.950	3.823	4.124	12.159
II. Significant home health users	47.730	12.579	13.675	4.091	6.627
III. Non-long term care users					
Female: <1	6.478	2.480	1.564	1.514	1.388
Female: 1-5	0.408	0.784	0.882	0.905	0.704
Female: 6-14	0.384	0.654	0.779	0.783	0.875
Female: 15-20	1.350	1.130	1.443	1.523	1.243
Female: All Ages	0.971	0.890	0.939	0.952	0.887
Male: <1	6.137	2.940	2.010	1.638	1.418
Male: 1-5	0.499	0.919	1.144	1.091	0.930
Male: 6-14	0.421	0.643	0.799	0.920	1.143
Male: 15-20	1.065	0.608	0.957	0.870	0.931
Male: All Ages	0.961	0.920	1.035	1.033	1.067
Total: <1	6.306	2.712	1.789	1.577	1.403
Total: 1-5	0.454	0.852	1.017	1.000	0.820
Total: 6-14	0.403	0.648	0.789	0.852	1.011
Total: 15-20	1.199	0.852	1.185	1.176	1.077
Total: All Ages	0.965	0.905	0.987	0.993	0.980
AFDC adults	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	0.000	0.000	0.000	0.000	0.000
II. Significant home health users	15.878	5.589	2.112	9.258	5.735
III. Non-long term care users					
Female: <21	2.040	1.940	1.344	0.508	1.003
Female: 21-44	0.903	0.996	1.025	1.027	1.106
Female: 45+	0.844	0.737	0.884	2.051	0.926
Female: All Ages	1.040	1.099	1.057	1.014	1.084
Male: <21	0.199	0.359	1.196	0.366	0.500
Male: 21-44	0.744	0.457	0.711	0.804	0.563
Male: 45+	1.060	0.641	0.560	1.667	0.525
Male: All Ages	0.778	0.482	0.701	0.922	0.556
Total: <21	1.968	1.879	1.338	0.502	0.983
Total: 21-44	0.878	0.909	0.975	0.991	1.019
Total: 45+	0.924	0.701	0.764	1.909	0.777
Total: All Ages	0.998	1.000	1.000	0.999	0.999

Table 5

Demographic factors, by selected characteristics:
Cash recipients in Maine, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Aged	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	1.698	0.915	0.786	1.706	3.041
II. Significant home health users	2.232	1.150	1.245	1.696	1.809
III. Non-long term care users					
Female: 65-74	0.773	0.874	1.143	0.973	0.605
Female: 75-84	0.874	0.911	0.776	1.061	0.913
Female: 85+	0.902	0.951	0.520	0.858	1.999
Female: All Ages	0.840	0.902	0.878	0.993	0.980
Male: 65-74	1.468	1.524	2.235	0.842	0.612
Male: 75-84	1.281	1.293	0.969	0.873	0.918
Male: 85+	0.828	0.931	0.735	0.799	1.223
Male: All Ages	1.282	1.325	1.408	0.850	0.850
Total: 65-74	0.920	1.012	1.378	0.945	0.606
Total: 75-84	0.964	0.992	0.816	1.020	0.914
Total: 85+	0.887	0.947	0.561	0.847	1.845
Total: All Ages	0.935	0.992	0.990	0.962	0.952
Disabled with Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	1.047	0.723	0.923	0.688	3.389
II. Significant home health users	2.392	2.592	2.029	1.647	1.186
III. Non-long term care users					
Female: <20	0.764	1.387	4.777	0.336	1.383
Female: 21-44	1.211	1.406	1.363	0.683	2.153
Female: 45-64	1.298	1.320	1.406	1.327	1.020
Female: 65+	0.864	0.697	0.514	1.231	0.661
Female: All Ages	1.037	0.993	0.946	1.150	1.025
Male: <20	1.531	2.103	0.746	0.300	0.124
Male: 21-44	0.758	0.976	1.589	0.547	1.053
Male: 45-64	0.769	0.857	0.660	0.853	0.811
Male: 65+	0.919	0.673	0.526	0.909	0.995
Male: All Ages	0.830	0.878	0.989	0.735	0.946
Total: <20	1.233	1.826	2.311	0.314	0.613
Total: 21-44	0.933	1.141	1.500	0.599	1.476
Total: 45-64	1.074	1.124	1.091	1.126	0.932
Total: 65+	0.880	0.690	0.517	1.140	0.755
Total: All Ages	0.951	0.945	0.963	0.978	0.992

Table 5

Demographic factors, by selected characteristics:
Cash recipients in Maine, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Disabled without Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	3.147	7.172	0.990	0.917	1.262
II. Significant home health users	1.389	1.247	1.037	1.154	1.217
III. Non-long term care users					
Female: <6	1.603	1.747	2.257	0.433	1.889
Female: 6-20	1.091	0.855	0.781	0.526	1.035
Female: 21-44	0.920	1.037	0.986	0.822	1.359
Female: 45-64	0.922	1.126	0.977	1.426	0.646
Female: All Ages	0.948	1.086	0.991	1.116	0.962
Male: <6	1.679	1.337	1.499	0.362	1.728
Male: 6-20	1.560	0.839	2.299	0.689	1.001
Male: 21-44	0.821	0.657	0.713	0.754	1.237
Male: 45-64	0.907	0.908	0.770	1.046	0.648
Male: All Ages	0.995	0.794	1.006	0.829	1.018
Total: <6	1.646	1.515	1.828	0.393	1.798
Total: 6-20	1.377	0.845	1.708	0.625	1.014
Total: 21-44	0.871	0.849	0.851	0.788	1.298
Total: 45-64	0.917	1.055	0.910	1.302	0.647
Total: All Ages	0.968	0.959	0.998	0.991	0.986

Table 6

Demographic factors, by selected characteristics:
Cash recipients in Wisconsin, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Aged	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	1.866	1.438	1.337	1.627	2.633
II. Significant Home Health Users	1.965	1.381	1.779	2.014	2.089
III. Non-Long Term Care Users					
Female: 65-74	0.688	0.918	1.006	0.851	0.711
Female: 75-84	0.805	0.924	0.898	0.978	0.829
Female: 85+	0.813	0.847	0.632	0.869	0.891
Female: All Ages	0.760	0.908	0.895	0.910	0.793
Male: 65-74	1.151	1.081	0.993	0.604	0.746
Male: 75-84	1.136	0.972	0.935	0.771	0.746
Male: 85+	1.116	0.940	0.719	0.721	0.815
Male: All Ages	1.139	1.013	0.927	0.695	0.756
Total: 65-74	0.799	0.957	1.003	0.791	0.719
Total: 75-84	0.882	0.935	0.906	0.930	0.809
Total: 85+	0.877	0.866	0.650	0.838	0.875
Total: All Ages	0.848	0.932	0.903	0.860	0.784
Disabled with Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	1.882	1.551	0.988	1.503	1.715
II. Significant Home Health Users	2.383	1.649	1.851	2.109	2.482
III. Non-Long Term Care Users					
Female: <20	0.348	0.520	0.474	0.403	0.341
Female: 21-44	0.880	1.078	1.141	0.888	1.075
Female: 45-64	0.964	1.218	1.136	1.230	0.914
Female: 65+	1.139	1.103	0.788	1.174	0.624
Female: All Ages	0.979	1.119	1.014	1.078	0.866
Male: <20	0.269	0.250	0.568	0.137	0.327
Male: 21-44	0.611	0.647	0.976	0.668	1.012
Male: 45-64	0.818	0.771	0.800	0.774	0.789
Male: 65+	1.216	0.994	0.624	0.852	0.589
Male: All Ages	0.729	0.707	0.863	0.695	0.864
Total: <20	0.295	0.339	0.537	0.223	0.332
Total: 21-44	0.724	0.828	1.045	0.760	1.039
Total: 45-64	0.902	1.028	0.994	1.037	0.861
Total: 65+	1.159	1.075	0.746	1.090	0.615
Total: All Ages	0.863	0.929	0.944	0.901	0.865

Table 6

Demographic factors, by selected characteristics:
Cash recipients in Wisconsin, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other
Disabled without Medicare	1.000	1.000	1.000	1.000	1.000
I. Institutionalized	0.857	1.074	0.996	1.052	1.801
II. Significant Home Health Users	2.537	2.034	2.160	3.410	3.505
III. Non-Long Term Care Users					
Female: <6	1.392	1.009	1.403	0.993	1.919
Female: 6-20	0.890	0.631	0.799	0.708	0.687
Female: 21-44	1.038	1.019	1.091	0.842	0.897
Female: 45-64	0.837	1.394	1.036	1.259	0.796
Female: All Ages	0.951	1.109	1.039	0.988	0.860
Male: <6	1.501	1.390	1.324	0.671	2.102
Male: 6-20	0.527	0.467	0.615	0.863	0.523
Male: 21-44	0.968	0.620	0.851	0.703	0.802
Male: 45-64	1.095	1.268	0.919	0.811	0.762
Male: All Ages	0.920	0.753	0.834	0.759	0.793
Total: <6	1.454	1.226	1.358	0.809	2.023
Total: 6-20	0.680	0.536	0.693	0.798	0.592
Total: 21-44	1.003	0.821	0.972	0.773	0.850
Total: 45-64	0.916	1.355	1.000	1.122	0.786
Total: All Ages	0.937	0.946	0.946	0.883	0.830

Table 7

Geographic factors, by selected characteristics: Cash recipients in Alabama, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other	Total	Number of person years
AFDC children							
I. Birmingham	1.021	1.008	1.009	1.008	0.995	1.013	26,010
II. Other urban	1.018	1.005	1.006	1.008	0.991	1.010	31,501
III. Rural	0.966	0.989	0.988	0.988	1.013	0.981	34,187
AFDC adults							
I. Birmingham	1.001	1.002	0.999	0.969	1.017	1.004	10,762
II. Other urban	0.991	0.994	0.997	0.983	1.000	0.994	12,788
III. Rural	1.008	1.004	1.004	1.040	0.987	1.002	13,818
Aged							
I. Birmingham	1.018	0.995	1.000	1.006	1.008	1.009	9,921
II. Other urban	0.982	0.993	1.000	0.998	1.000	0.992	12,789
III. Rural	1.002	1.004	1.000	0.999	0.992	1.000	27,197
Disabled with Medicare							
I. Birmingham	0.933	0.968	1.000	0.951	1.049	0.955	10,272
II. Other urban	0.969	0.980	1.000	0.975	1.004	0.976	10,471
III. Rural	1.060	1.034	1.010	1.045	0.966	1.042	16,852
Disabled without Medicare							
I. Birmingham	0.991	0.993	1.003	0.994	1.015	0.995	13,637
II. Other urban	1.009	0.984	0.980	0.973	0.995	0.995	13,129
III. Rural	1.000	1.017	1.012	1.024	0.993	1.007	18,130

Table 8

Geographic factors, by selected characteristics: Cash recipients in Kentucky and Wisconsin, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other	Total	Number of person years
Kentucky:							
AFDC children							
I. Louisville	1.160	1.057	1.030	1.036	0.999	1.079	32,060
II. Other urban	1.015	1.016	1.007	1.015	0.997	1.010	17,227
III. Rural	0.928	0.971	0.986	0.982	1.001	0.963	74,231
AFDC adults							
I. Louisville	1.015	1.017	0.991	0.927	1.013	1.004	15,072
II. Other urban	0.984	0.997	0.988	0.956	1.000	0.988	8,493
III. Rural	0.998	0.994	1.006	1.040	0.995	1.001	37,973
Wisconsin:							
Aged							
I. Milwaukee	0.989	1.000	1.015	1.018	1.008	1.009	5,933
II. Other urban	1.006	1.005	1.012	1.012	1.018	1.012	5,366
III. Rural	1.003	0.995	0.987	0.984	0.987	0.989	11,111
Disabled with Medicare							
I. Milwaukee	0.983	0.986	1.011	0.993	1.005	0.997	10,871
II. Other urban	0.997	1.003	1.015	1.000	1.020	1.008	7,571
III. Rural	1.024	1.013	0.976	1.009	0.978	0.996	9,131
Disabled without Medicare							
I. Milwaukee	1.002	0.992	0.998	0.996	0.983	0.995	16,695
II. Other urban	1.001	0.999	1.004	1.004	1.039	1.012	9,506
III. Rural	0.996	1.015	0.999	1.002	0.991	0.997	9,254

Table 9

Geographic factors, by selected characteristics:
Cash recipients in Maine, FY 1990

	Inpatient hospital	Physician	Outpatient hospital	Prescription drugs	Other	Total	Number of person years
AFDC children							
I. Urban	1.049	1.025	1.011	1.007	1.004	1.025	17,509
II. Rural	0.952	0.975	0.989	0.996	0.996	0.976	17,973
AFDC adults							
I. Urban	1.013	1.020	1.011	0.990	1.011	1.012	11,012
II. Rural	0.987	0.981	0.990	1.010	0.989	0.989	11,532
Aged							
I. Urban	0.993	0.992	1.000	1.005	1.006	1.001	2,593
II. Rural	1.004	1.008	1.000	0.997	0.996	0.999	4,209
Disabled with Medicare							
I. Urban	1.002	1.024	1.049	0.977	1.030	1.006	2,738
II. Rural	0.998	0.981	0.957	1.020	0.975	0.995	3,224
Disabled without Medicare							
I. Urban	1.004	1.006	0.999	0.989	1.020	1.007	5,050
II. Rural	0.996	0.995	1.001	1.010	0.982	0.994	5,680

Table 10

Average costs and number of eligible years, by eligibility group and state: Non-long term care users receiving cash, 1990

State and basis of eligibility	All eligibles		New eligibles with hospital expenses		All other eligibles	
	Average cost per person year	Number of person years	Average cost per person year	Number of person years	Average cost per person year	Number of person years
Alabama						
Aged	$652	44,248	$2,565	157	$646	44,091
Disabled with Medicare	779	34,492	3,578	171	765	34,321
Disabled without Medicare	2,143	41,393	14,225	809	1,903	40,584
Maine						
Aged	1,216	6,452	2,452	141	1,189	6,310
Disabled with Medicare	2,007	5,758	2,755	65	1,998	5,693
Disabled without Medicare	4,613	10,100	25,830	173	4,243	9,927
Wisconsin						
Aged	1,047	19,251	3,726	186	1,021	19,065
Disabled with Medicare	1,626	24,673	7,823	132	1,593	24,541
Disabled without Medicare	3,764	31,868	22,879	523	3,445	31,345

Table 11

Comparisons of average costs and number of eligible years, by coverage group, state and eligibility status: Non-long term care users receiving cash, 1990

State and basis of eligibility	Number of person years for *coverage group A*, expressed as a percent of all person years	Difference in average costs between *coverage groups A & B*, expressed as a percent of the average cost for *coverage group B*	Difference in average costs between *coverage groups B & C*, expressed as a percent of the average cost for *coverage group C*
Alabama			
Aged	0.4	297.4	-1.0
Disabled with Medicare	0.5	367.5	-1.8
Disabled without Medicare	2.0	647.7	-11.2
Maine			
Aged	2.2	106.3	-2.3
Disabled with Medicare	1.1	37.9	-0.4
Disabled without Medicare	1.7	508.8	-8.0
Wisconsin			
Aged	1.0	264.9	-2.5
Disabled with Medicare	0.5	391.1	-2.0
Disabled without Medicare	1.6	564.0	-8.5

COVERAGE GROUP DEFINITIONS:

Coverage group A: New eligibles with hospital expenses
Coverage group B: All eligibles except new eligibles with hospital expenses
Coverage group C: All eligibles

Table 12

Adjustment and projection factors applied to FY 1990 MSIS base year costs:

Cash Recipients, non-LTC users in Alabama

	HCFA-64 adjustments to MSIS	*FY 1990 MSIS base year costs* AFDC child	AFDC adult	Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	0.987	208	401	232	296	1029
Outpatient	0.919	34	72	3	10	133
Physician	1.011	106	317	56	68	427
Drugs	1.028	25	86	382	382	348
Other	0.988	55	373	26	71	228
Total acute		$428	$1,249	$699	$827	$2,165

	Projection factors FY 1990-93 AFDC child	AFDC adult	Aged	Disabled	*Adjusted FY 1993 costs* AFDC child	AFDC adult	Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	1.125	0.953	1.220	1.549	231	377	279	453	1573
Outpatient	1.794	1.639	2.000	1.582	56	108	6	15	193
Physician	1.085	1.028	1.536	1.408	116	329	87	97	608
Drugs	2.240	1.965	1.843	1.461	58	174	724	574	523
Other	2.143	2.300	0.808	1.780	116	848	21	125	401
Total acute	1.3624	1.4817	1.580	1.528	$577	$1,836	$1,116	$1,262	$3,298
Increase percentage between projected and base year costs					34.9%	47.0%	59.7%	52.7%	52.3%

Table 13

Adjustment and projection factors applied to FY 1990 MSIS base year costs:
Cash Recipients, non-LTC users in Kentucky

	HCFA-64 adjustments to MSIS	*FY 1990 MSIS base year costs* AFDC child	AFDC adult
Inpatient	0.999	262	572
Outpatient	1.016	101	252
Physician	1.156	129	299
Drugs	0.979	39	116
Other	0.974	140	239
Total		$671	$1,478

	Projection factors FY 1990-93 AFDC child	AFDC adult	*Adjusted FY 1993 costs* AFDC child	AFDC adult
Inpatient	1.011	0.991	265	566
Outpatient	1.604	1.679	165	430
Physician	1.643	1.696	245	586
Drugs	1.872	1.793	71	204
Other	1.507	1.895	205	441
Total	1.383	1.466	$951	$2,227
Increase percentage between projected and base year costs			41.8%	50.7%

Table 14

Adjustment and projection factors applied to FY 1990 MSIS base year costs:
Cash Recipients, non-LTC users in Maine

	HCFA-64 adjustments to MSIS	*FY 1990 MSIS base year costs* AFDC child	AFDC adult	Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	0.835	265	629	406	633	1954
Outpatient	0.813	150	303	10	35	493
Physician	1.014	98	208	25	42	275
Drugs	0.965	46	126	554	604	596
Other	0.890	171	245	283	747	1394
Total		$730	$1,511	$1,278	$2,061	$4,712

	Projection factors FY 1990-93 AFDC child	AFDC adult	Aged	Disabled	*Adjusted FY 1993 costs* AFDC child	AFDC adult	Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	1.298	1.321	1.461	1.549	287	694	495	819	2527
Outpatient	1.453	1.350	4.900	1.582	177	333	40	45	634
Physician	1.388	0.981	2.760	1.408	138	207	70	60	393
Drugs	1.261	1.325	1.428	1.461	56	161	763	852	840
Other	1.830	1.506	2.343	1.780	279	328	590	1183	2208
Total	1.466	1.303	1.690	1.600	$937	$1,723	$1,959	$2,959	$6,603
Increase percentage between projected and base year costs					28.3%	14.0%	53.3%	43.6%	40.1%

Table 15

Adjustment and projection factors applied to FY 1990 MSIS base year costs:
Cash Recipients, non-LTC users in Wisconsin

	HCFA-64 adjustments to MSIS	*FY 1990 MSIS base year costs* Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	1.025	235	275	1669
Outpatient	0.976	100	213	493
Physician	0.977	63	72	235
Drugs	0.984	532	637	635
Other	1.266	307	633	1146
Total		$1,237	$1,830	$4,178

Projection factors FY 1990-93	Aged	Disabled
Inpatient	1.268	1.276
Outpatient	1.44	1.155
Physician	1.349	1.081
Drugs	1.289	1.247
Other	1.414	1.399
Total	1.336	1.291

Adjusted FY 1993 costs	Aged	Disabled with Medicare	Disabled without Medicare
Inpatient	305	360	2183
Outpatient	141	240	556
Physician	83	76	248
Drugs	675	782	779
Other	550	1121	2030
Total	$1,753	$2,579	$5,796
Increase percentage between projected and base year costs	41.7%	40.9%	38.7%

Table 16

FY 1990 Administrative Expenses

HCFA-64 Administrative and Training	Alabama	Kentucky	Maine	Wisconsin
Family Planning	68,069	72		0
Design Development Inhouse	8,417	167,148		25,243
Design Development Contractor	107,750	3,357		230,013
Design Development Drugs				
Skilled Professionals	1,135,067	405,185	942,323	70,372
MMIS Operation Inhouse	6,498,675	468,888	4,406,724	779,675
MMIS Operation Contractor	2,889,080	6,854,799	722,756	10,236,020
Mechanized Systems Inhouse (non-MMIS)				1,408,431
Mechanized Systems Contractor	694,381	1,537,616	--	5,575,575
Peer Review		2,210,707		1,344,462
Other Finance	12,534,980	20,038,794	13,748,636	20,656,350
3rd party liab		39,393	10,256	
Assignment of rights		10,473	4,313	
Immigration Status Verification		36		
Nurse Aide	469,755	603,955	48,492	
Preadmission	1,438,660	293,643		805,857
Resident review of mentally ill		577,703		
Drug Use review				
Drug Implementation Costs				
Total Current Expenditures	25,844,834	33,211,769	19,883,500	41,131,998
Increase in Claims (Prior quarters)	8,139,977	53,711	100,908	13,851,586
Other expenditures		1,649,727		201,592
Collect other Collections	33,880	5,038		8,518
Decrease in Claims, Fed Audits				
Decrease in Claims, Other	7,028,899	2,115,592	1,325	272,610
Net Admin Expenditures Reported	26,922,032	32,794,577	19,983,083	54,904,048
HCFA-64 Medical Expenditures	796,767,788	1,001,112,935	431,896,944	1,472,124,280
Administration as % Medical	3.4%	3.3%	4.6%	3.7%

APPENDIX A - PROCESSING MSIS DATA

I. Summary

Appendix A describes the methods used to combine expenditure and eligibility data from the Personal Summary Record Files in order to calculate base year costs to be used in determining the upper payment limits. To accomplish this, procedures were established to process the individual records, evaluate their appropriateness for inclusion in the rate development, and aggregate the data into useful categories for further analysis.

Summary tables were produced for the states of Alabama (Tables A.1 through A.10), Kentucky (Tables A.11 through A.14), Maine (Tables A.15 through A.24), and Wisconsin (A.25 through A.30). These tables detail average acute costs, person years, standard deviations, and minimum cell sizes broken down by Medicaid Assistance Status (MAS), Basis of Eligibility (BOE), Medicare status, age, sex, and institutionalization category.

The tables for Alabama and Maine include data on the aged, disabled, and AFDC eligibles who were categorically needy (both receiving and not receiving cash assistance). The Kentucky tables only include the AFDC eligibles because their non-cash SSI population was small and atypical. The tables for Wisconsin only include aged and disabled eligibles because many of the AFDC eligibles are already enrolled in HMOs.

II. Data Edits and Corrections

Before processing, each record was checked for 46 different data edits, such as invalid dates of birth or death. Some of the data edits provide information only and others detect errors in the data. Because the soundness of the final accumulated data depends on the validity of the individual records, action is required to amend some of the records flagged in the data edit processing. For example, a record was excluded if it fails any of the following seven data edits: date of death before 10/1/89, date of birth after 9/30/90, invalid dates, date of death occurring prior to date of birth, HMO payment noted on the record, or no months of eligibility noted.

The program "corrects" the record for three other errors. If sex was invalid, a code was imputed. For AFDC adults (BOE = 5), the sex was assumed to be female. For the aged (BOE = 1), sex was assigned as female, male, female, female, male, female. For the other BOE classifications (BOE = 3 or 4), sex was imputed to

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